CCD-TR480E/TR480EU/TR580E/TR580EU/TR670E
TR670EU/TR675E/TR680E/TR780E/TR880E

RMT-708

SERVICE MANUAL

AEP Model
CCD-TR580E/TR680E/TR780E

UK Model
CCD-TR580E/TR680E/TR780E/

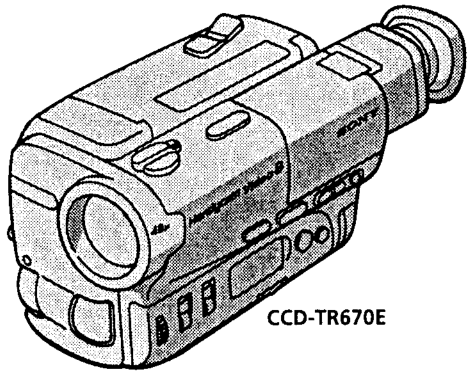
E Model
CCD-TR480E/TR480EU/TR580E/TR580EU/
TR670E/TR670EU/TR880E

Australian Model
CCD-TR480E/TR580E/TR670E/TR880E

Hong Kong Model
CCD-TR580E/TR670E/TR880E

Tourist Model
CCD-TR670E

Chinese Model
CCD-TR675E


CCD-TR670E

Handycam

A MECHANISM

- CCD-TR480EU/TR580EU/TR670EU are models that screwdriver and RFU adaptor (RFU-99E) are added in CCD-TR480E/TR580E/TR670E.
- CCD-TR480EU/TR580EU/TR670EU are different from CCD-TR480E/TR580E/TR670E only in the accessories and packing materials.
- Refer to page 4 as for the distinction of the function table of models and classification.

For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL IV" (9-973-199-11).

SPECIFICATIONS

Video Camera Recorder

System

Video recording system
Two rotary heads, Helical scanning FM system

Audio recording system
Rotary heads, FM system

Video signal
PAL colour, CCIR standards

Usable cassette
8 mm video format cassette (Hi8 or standard 8 mm)

Tape speed
SP mode: Approx.
20 mm (13/16 in)/second
LP mode: Approx.
10 mm (13/32 in)/second
(AEP, UK model: playback only)

Recording time
SP mode: 1.5 hours (E5/P5-90)
LP mode: 3 hours (E5/P5-90)

Playback time
SP mode: 1.5 hours (E5/P5-90)
LP mode: 3 hours (E5/P5-90)

Fastforward/rewind time
Approx. 6 min. 30 sec. (E5/P5-90)

Image device
CCD (Charge Coupled Device)

Viewfinder
See the table next page.

Lens
Combined power zoom lens, 24×, 48×, 60× (Digital), 12× (Optical)
Filter diameter 37 mm (1 1/2 in), TTL autofocus system, inner focus wide macro system

Focal distance
See the table next page.

Colour temperature
Auto

Minimum illumination
See the table next page.

Illumination range
See the table next page.

Recommended illumination
More than 100 lux

Input and Output connectors

S Video input*/output
4-pin mini DIN
Luminance signal: 1 Vp-p, 75 Ω, unbalanced, sync negative
Chrominance signal: 0.286 Vp-p, 75 Ω, unbalanced
*: CCD-TR880E only

Video input*/output
Phono jack, 1 Vp-p, 75 Ω, unbalanced, sync negative
*: CCD-TR880E only

Audio input*/output
Phono jacks (2: stereo L and R)
327 mV, (at output impedance 47 kΩ)
impedance less than 2.2 kΩ
*: CCD-TR880E only

RFU DC OUT
Special minijack, DC 5V

Headphone jack
Stereo minijack

— Continued on next page —

8 VIDEO CAMERA RECORDER
CCD-TR480E/TR480EU/TR580E/TR580EU/TR670E/TR670EU/TR675E

Hi8 VIDEO CAMERA RECORDER
CCD-TR680E/TR780E/TR880E

SONY®

LANC control jack
Stereo mini-minijack
(ϕ 2.5 mm)

MIC jack
Minijack, 0.388 mV low impedance with 2.5 to 3.0V DC, output impedance 6.8 kΩ
(ϕ 3.5 mm)

General

Power requirements
On battery mounting surface
6.0V (battery pack)
7.5V (AC power adaptor)

Average power consumption
Refer to the following table.

Installation
Vertically, horizontally

Operating temperature
0 ℃ to 40 ℃ (32 °F to 104 °F)

Storage temperature
-20 ℃ to +60 ℃
(-4 °F to +140 °F)

Dimensions
Refer to the following table.

Mass
Refer to the following table.

Microphone
Electret condenser microphone, stereo type

Supplied accessories
See page 3.

		CCD-TR480E	CCD-TR580E	CCD-TR670E /TR675E	CCD-TR680E	CCD-TR780E	CCD-TR880E	Notes
Viewfinder		monochrome		colour	monochrome		colour	—
Focal distance		5.4 – 64.8 mm (7/32 – 2 5/8 in)						6.5 – 78 mm (9/32 – 3 1/8 in) when recording **(CCD-TR670E/TR780E/TR880E** only)
		39 – 468 mm (1 9/16 – 18 1/2 in)						When converted to a 35 mm still camera 47 – 564 mm (1 7/8 – 22 1/4 in) when recording **(CCD-TR670E/TR780E/TR880E** only)
Minimum illumination		0.8 lux	4 lux		3 lux	4 lux	3 lux	F1.8
Illumination range		0.8 lux to 100,000 lux	4 lux to 100,000 lux		3 lux to 100,000 lux	4 lux to 100,000 lux	3 lux to 100,000 lux	—
Average power consumption		5.3W	5.6W	5.8W	5.6W	5.8W	5.9W	During camera recording
Dimensions (Approx.)		114×110×206 mm (4 1/2×4 3/8×8 1/8 in)		114×110×209 mm (4 1/2×4 3/8×8 1/4 in)	114×110×206 mm (4 1/2×4 3/8×8 1/8 in)		114×110×209 mm (4 1/2×4 3/8×8 1/4 in)	w×h×d
Mass (Approx.)		890g (1 lb 15 oz)	900g (2 lb)			910g (2 lb)		Excluding the battery pack, lithium battery, cassette and shoulder strap.
		1,110g (2 lb 7 oz)	1,120g (2 lb 7 oz)			1,130g (2 lb 7 oz)		Including the battery pack NP-55, lithium battery CR2025, cassette E5/P5-90, and shoulder strap.

AC power adaptor

Power requirements
110 – 240V AC, 50/60 Hz

Power consumption
17W

Output voltage
DC OUT: 7.5V, 1.5A in operating mode
Battery charge terminal: 10V, 1.1A in charge mode

Application
Sony battery packs NP-55, NP-98/98D, NP-77H/77HD, NP-68, NP-67, NP-66H, NP-65, NP-55H

Operating temperature
0 ℃ to 40 ℃ (32 °F to 104 °F)

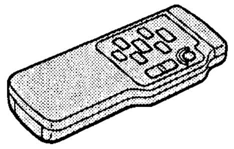
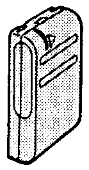
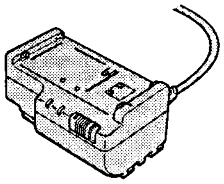
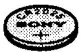
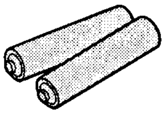
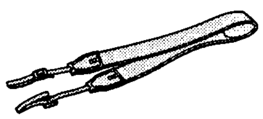
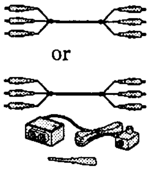
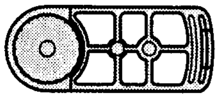
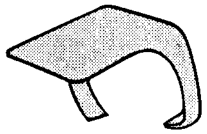
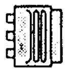
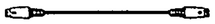
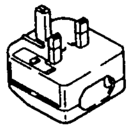
Storage temperature
-20 ℃ to +60 ℃
(-4 °F to +140 °F)

Dimensions
Approx.
103×49×63 mm
(4 1/8×1 15/16×2 1/2 in)
(w/h/d)
including projecting parts and controls

Mass (Approx.)
AC-V25A: 320g (11 oz)
AC-V25B/V25C: 300g (10 oz)

Design and specifications are subject to change without notice.

Supplied accessories

1 	2 	3 
4 	5 	6 
7 	8 	9 
10 	11 	12 

1 **Wireless Remote Commander** (1)
2 **NP-55 Battery pack** (1)
3 **AC-V25A/V25B/V25C AC power adaptor** (1)
4 **CR2025 Lithium Battery** (1)
(The lithium battery is already installed in your camcorder.)
5 **R6 (size AA) battery for Remote Commander** (2)
6 **Shoulder strap** (1)
7 **A/V connecting cable of RFU-99E RFU adaptor (supplied with a screwdriver) (CCD-TR480EU/TR580EU/TR670EU)** (1)
8 **Tripod adaptor** (1)
9 **Shading cover (CCD-TR670E/TR675E/TR880E** only**)** (1)
10 **21-pin adaptor** (1) **(AEP, UK model)**
11 **S video connecting cable** (1) **(CCD-TR680E/TR780E/TR880E)**
12 **Conversion connector** (1) **(Hong Kong model)**

Table for difference of functions

Model		TR480E	TR480EU	TR580E		TR580EU	TR670E	TR670EU	TR675E	TR680E	TR780E	TR880E
Destination		E, AUS	E	AEP, UK	E, AUS, HK	E	E, AUS, HK, JE	E	CH	AEP, UK	AEP, UK	E, AUS, HK, JE
Classification		(TYPE A)		(TYPE B)	(TYPE C)		(TYPE D)		(TYPE E)	(TYPE F)	(TYPE G)	(TYPE H)
Hi8										○	○	○
Standard 8		○	○	○	○	○	○	○	○			
Steady Shot				○	○	○	○	○	○		○	○
Zoom (X)	Optical	12	12	12	12	12	12	12	12	12	12	12
	Digital	48	48	24	48	48	48	48	60	24	24	48
Image Device		510	510	760	760	760	760	760	760	760	760	760
Viewfinder		W/B	W/B	W/B	W/B	W/B	Color	Color	Color	W/B	W/B	Color
Exposure										○	○	○
Backlight		○	○	○	○	○	○	○	○			
LP Mode Recording		○	○		○	○	○	○	○			○
Line In Jack (VTR REC)												○

- abbreviation

AUS	: Australian model
HK	: Hong Kong model
CH	: Chinese model
JE	: Tourist model

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit board Repairing
   - Keep the temperature of the solderingiron around 270°C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

[Zoom lens]

This unit employs three types of lens.
Note that the lenses are interchangeable, however their components are not.

Differentiating the lens ☛ : difference point

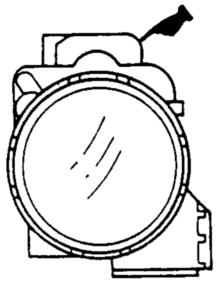
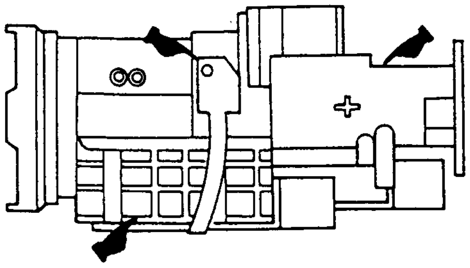
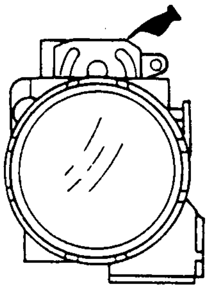
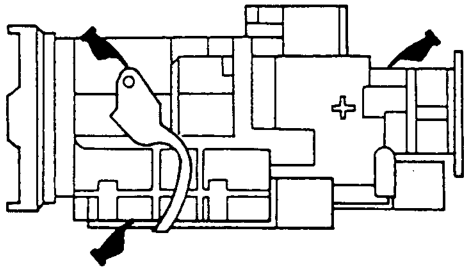
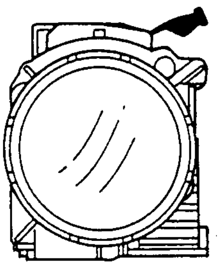
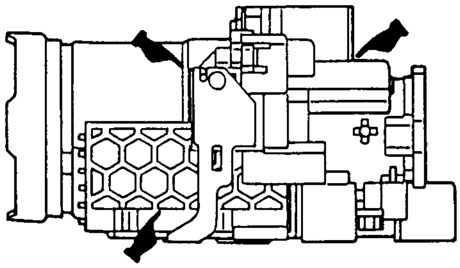
TYPE Ⅰ (LSV-140A)	TYPE Ⅱ (VCL-5412WA)
From the front of the lens  From the right side of the lens (as seen from the front) 	From the front of the lens  From the right side of the lens (as seen from the front) 
TYPE Ⅲ (VCL-5412WB)	
From the front of the lens  From the right side of the lens (as seen from the front) 	

TABLE OF CONTENTS

Section Title Page

SERVICE NOTE

Semiconductor for Correction List Display 9
Parts Location Diagram Related to Power Supply 9
Semiconductor Location 9
Head Cleaning 9

1. GENERAL

Checking Your Model Number 1-1
Checking Supplied Accessories 1-2
Charging and Installing the Battery Pack 1-2
Inserting a Cassette 1-4
Camera Recording 1-5
Hints for Better Shooting 1-7
Checking the Recorded Picture 1-8
Connections for Playback 1-9
Playing Back a Tape 1-10
Using Alternative Power Sources 1-11
Recording with the Date or Time 1-12
Shooting with Backlighting 1-13
Using the PROGRAM AE Function 1-13
Fade-in and Fade-out 1-14
Focusing Manually 1-15
Releasing the STEADY SHOT Function 1-16
Enjoying Picture Effect 1-16
Shooting Scenery in Several Short Takes 1-17
Changing the Mode Settings 1-18
Using the Wide Mode Function 1-19
Editing onto Another Tape 1-20
Changing the Lithium Battery 1-21
Resetting the Date or Time 1-22
Playback Modes 1-22
Tips for Using the Battery Pack 1-23
Maintenance Information and Precautions 1-24
Using Your Camcorder Abroad 1-27
Identifying the Parts 1-27
Warning Indicators 1-31

2. DISASSEMBLY

2-1. Removal of Front Panel Block 2-1
2-2. Removal of Cassette Lid Assembly 2-1
2-3. Removal of Cabinet (L) Assembly 2-2
2-4. Removal of Cabinet (R) Assembly 2-2
2-5. Removal of W/B EVF Assembly 2-3
2-5. Removal of Color EVF Assembly 2-3
2-6. Removal of Control Switch Block (CK) 2-4
2-7. Removal of DD-78 Board 2-4
2-8. Removal of Terminal Board and AU-184 Board 2-5
2-9. Removal of Zoom Lens and VC-161 Board 2-5
2-10. Removal of VS-125 Board 2-6
2-11. Removal of SL-38 Board 2-6
2-12. Removal of Control Switch Block (FK) and ZB-2 Board 2-6
2-13. Internal Views 2-7
2-14. Circuit Boards Location 2-8

3. BLOCK DIAGRAMS

3-1. Overall Block Diagram 3-1
3-2. Camera Block Diagram 3-5
3-3. Video (1) Block Diagram 3-9
3-4. Video (2) Block Diagram 3-14
3-5. Servo Block Diagram 3-17
3-6. System Control Block Diagram 3-20
3-7. Audio Block Diagram 3-23
3-8. Color EVF Block Diagram 3-25
3-9. W/B EVF Block Diagram 3-27
3-10. Power Block Diagram 3-28

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. Frame Schematic Diagram 4-1
4-2. Printed Wiring Boards and Schematic Diagrams 4-4
- CD-137 Board 4-5
- FP-49 Board 4-7
- VC-161 (Camera, Lens Drive, Steady Shot Control) Board 4-9
- VC-161 (Camera 1) Board 4-11
- VC-161 (Camera 2) Board 4-14
- VC-161 (Lens Drive) Board 4-17
- VC-161 (Steady Shot Control) Board 4-19
- VS-125 (REC/PB Head Amplifier, Y/C Process, Hi 8 I/O, Electric Volume, Servo/System Control, Signal I/O) Board 4-23
- VS-125 (REC/PB Head Amplifier) Board 4-27
- VS-125 (Y/C Process) Board 4-30
- VS-125 (Hi 8 I/O, Electric Volume) Board 4-34
- VS-125 (Servo/System Control) Board 4-36
- VS-125 (Signal I/O) Board 4-39
- HE-19 Board 4-42
- PJ-68 Board 4-46
- ZB-2 Board 4-47
- SL-38, LS-33 Board 4-49
- AU-184 Board 4-54
- MA-233 Board 4-58
- VF-65 Board 4-61
- VF-72, VF-73, LB-38 Boards 4-65
- DD-78 Board 4-71

5. REPAIR PARTS LIST

5-1. Exploded Views 5-1
  5-1-1. Front Panel Block Assembly 5-1
  5-1-2. Cabinet (L) Block Assembly 5-2
  5-1-3. Cabinet (R) Block Assembly 5-3
  5-1-4. W/B EVF Block Assembly 5-4
  5-1-5. Color EVF Block Assembly 5-5
  5-1-6. Main Boards Assembly 5-6
  5-1-7. CCD Block Assembly 5-7
  5-1-8. Zoom Lens Assemblies (LSV-140A) (VCL-5412WA) (VCL-5412WB) 5-8
  5-1-9. Cassette Compartment Assembly 5-9
  5-1-10. LS Chassis Assembly 5-10
  5-1-11. Mechanism Chassis Assembly (1) 5-11
  5-1-12. Mechanism Chassis Assembly (2) 5-12
5-2. Electrical Parts List 5-13
HARDWARE LIST 5-41

6. ADJUSTMENTS

Section	Title	Page
6-1.	CAMERA SECTION ADJUSTMENTS	6-1
1-1.	Preparations Before Adjustment (Camera Section)	6-1
1-1-1.	List of Service Tools	6-1
1-1-2.	Preparations	6-3
1-1-3.	Precautions	6-5
1.	Switch settings	6-5
2.	Adjusting Procedure	6-5
3.	Subject	6-5
1-1-4.	Adjusting Remote Commander	6-6
1.	Using the adjusting remote commander	6-6
2.	Precautions upon using the adjusting remote commander	6-6
1-1-5.	Page F Address List	6-7
1-1-6.	Data Processing	6-10
1-2.	Camera System Adjustment	6-11
1.	Power Supply Voltage Check (DD board)	6-11
2.	Page F Data Initialization	6-11
3.	Page F Data Modification 1	6-12
4.	Page F Data Modification 2	6-12
5.	28 MHz Original Oscillation Adjustment (VC board)	6-13
6.	V SUB Adjustment	6-13
7.	VRG Adjustment	6-13
8.	Flange Back Adjustment	6-14
9.	Flange Back Check	6-14
10.	HALL Adjustment	6-15
11.	Picture Frame Setting	6-16
12.	Color Reproduction Adjustment	6-17
13.	IRIS IN/OUT Adjustment (VC board)	6-18
14.	MAX GAIN Adjustment (VC board)	6-19
15.	Auto White Balance Standard Data Input	6-19
16.	Auto White Balance Adjustment	6-20
17.	White Balance Check	6-20
18.	VIDEO OUT Level Check	6-21
1-3.	Color Electronic Viewfinder System Adjustments	6-22
1.	Current Consumption Adjustment (VF-72 board)	6-23
2.	Power Supply Voltage Check (VF-73 board)	6-23
3.	EVR Initial Data Input	6-23
4.	VCO Adjustment (VF-73 board)	6-24
5.	Bright Adjustment (VF-73 board)	6-24
6.	Contrast Adjustment (VF-73 board)	6-25
7.	SUB Bright R Preset Adjustment (1) (VF-73 board)	6-25
8.	SUB Bright B Preset Adjustment (2) (VF-73 board)	6-26
9.	White Balance Adjustment	6-26
10.	Burst Creaning Adjustment	6-27
1-4.	Arrangement Diagram for Adjustment Parts	6-28
6-2.	MECHANICAL SECTION ADJUSTMENTS	6-33
2-1.	Operating Without a Cassette	6-33
2-2.	Tape Path Adjustment	6-33
1.	Preparations for adjustments	6-33
6-3.	VIDEO SECTION ADJUSTMENTS	6-34
3-1.	Preparations Before Adjustment	6-34
3-1-1.	Equipments to be Used	6-34
3-1-2.	Adjusting Precautions	6-34
3-1-3.	Connecting the Equipments	6-35
3-1-4.	How to Set the REC Mode in the Model without REC switch (Without LINE-IN model)	6-36
3-1-5.	Checking the Input Signals	6-37
1.	CAMERA input	6-37
2.	VIDEO input	6-37
3-1-6.	Alignment Tape	6-38
3-1-7.	Input/Output Level and Impedance	6-39
3-1-8.	Service Mode	6-40
1.	Test mode setting	6-40
2.	Emergency code	6-40
3.	Emergency mode	6-41
4.	Bit value discrimination	6-41
5.	Battery voltage check	6-42
6.	Mechanism controller input/output check	6-43
7.	Mode switch and CC DOWN switch check	6-44
8.	Tape top/end sensor check	6-45
9.	Version of mechanical control microprocessor	6-45
10.	Mode switch and CC DOWN switch check	6-46
11.	Tape top/end sensor check	6-47
12.	Version of mechanical control microprocessor	6-47
13.	Drum Running Time	6-47
14.	Page D address list for standard 8 mm model	6-48
15.	Page D address list for Hi8 model	6-50
3-2.	Power System Adjustments	6-53
1.	Oscillator Frequency Check (DD board)	6-53
2.	Power Voltage Check (DD board)	6-53
3-3.	System Control System Adjustments	6-53
1.	Page D Initial Value Input	6-53
2.	Battery End Adjustment	6-54
3.	Battery Down Check	6-55
3-4.	Servo System Adjustments	6-55
1.	Switching Position Adjustment (VS board)	6-55
3-5.	Standard 8 mm Video System Adjustments	6-56
1.	Playback Frequency Characteristic Adjustment (VS board)	6-56
2.	Flying Erase Check (VS board)	6-57
3.	VXO Oscillation Frequency Check (VS board)	6-57
4.	SYNC AGC Level Adjustment (VS board)	6-57
5.	Comb Filter Adjustment (VS board)	6-58
6.	Emphasis Input Level Adjustment (VS board)	6-59
7.	WHITE CLIP Check (VS board)	6-59
8.	DARK CLIP Check (VS board)	6-60
9.	DE EMPH Level Adjustment (VS board)	6-60
10.	PB Y OUT Level Adjustment	6-61
11.	Y FM Carrier Frequency Adjustment (VS board)	6-61
12.	Y FM Deviation Adjustment (VS board)	6-62
13.	Chroma Emphasis Adjustment 1 (VS board)	6-62
14.	Chroma Emphasis Adjustment 2 (VS board)	6-63
15.	Comb Filter Fine Adjustment (VS board)	6-63
16.	REC Y Level Adjustment (VS board)	6-64
17.	REC L Adjustment (VS board)	6-64
18.	REC CHROMA Level Adjustment (VS board)	6-65
19.	REC ATF Level Check (VS board)	6-66

Section Title Page

3-6. Hi8 Video System Adjustments ········ 6-66
1. Playback Frequency Characteristic Adjustment (VS board) ········ 6-67
2. Flying Erase Check (VS board) ········ 6-68
3. VXO Oscillation Frequency Check (VS board) ········ 6-68
4. SYNC AGC Level Adjustment (VS board) ········ 6-68
5. Comb Filter Adjustment (VS board) ········ 6-69
6. Emphasis Input Level Adjustment (VS board) ········ 6-70
7. WHITE CLIP Check (VS board) ········ 6-70
8. DARK CLIP Check (VS board) ········ 6-71
9. DE EMPH Level Adjustment (VS board) ········ 6-71
10. PB Y OUT Level Adjustment (VS board) ········ 6-72
11. Standard 8 mm Mode Y FM Carrier Frequency Adjustment (VS board) ········ 6-72
12. Standard 8 mm Mode Y FM Deviation Adjustment (VS board) ········ 6-73
13. Hi8 Mode Y FM Carrier Frequency Adjustment (VS board) ········ 6-73
14. Hi8 Mode Y FM Deviation Adjustment (VS board) ········ 6-74
15. Chroma Emphasis Adjustment 1 (VS board) ········ 6-74
16. Chroma Emphasis Adjustment 2 (VS board) ········ 6-75
17. Comb Filter Fine Adjustment (VS board) ········ 6-75
18. REC Y Level Adjustment (VS board) ········ 6-76
19. REC L Adjustment (VS board) ········ 6-77
20. REC CHROMA Level Adjustment (VS board) ········ 6-78
21. REC ATF Level Check (VS board) ········ 6-78
3-7. Audio System Adjustment ········ 6-79
1. E-E Output Level Check ········ 6-80
2. 1.5 MHz Deviation Adjustment ········ 6-80
3. 1.7 MHz Deviation Adjustment ········ 6-81
4. BPF Adjustment ········ 6-81
5. Overall Level Characteristics, Distortion Check ········ 6-82
6. Separation Check ········ 6-82
3-8. Arrangement Diagram for Adjustment Parts ········ 6-84

There is the color reproduction standard frame at the back of the book.

SERVICE NOTE

[SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

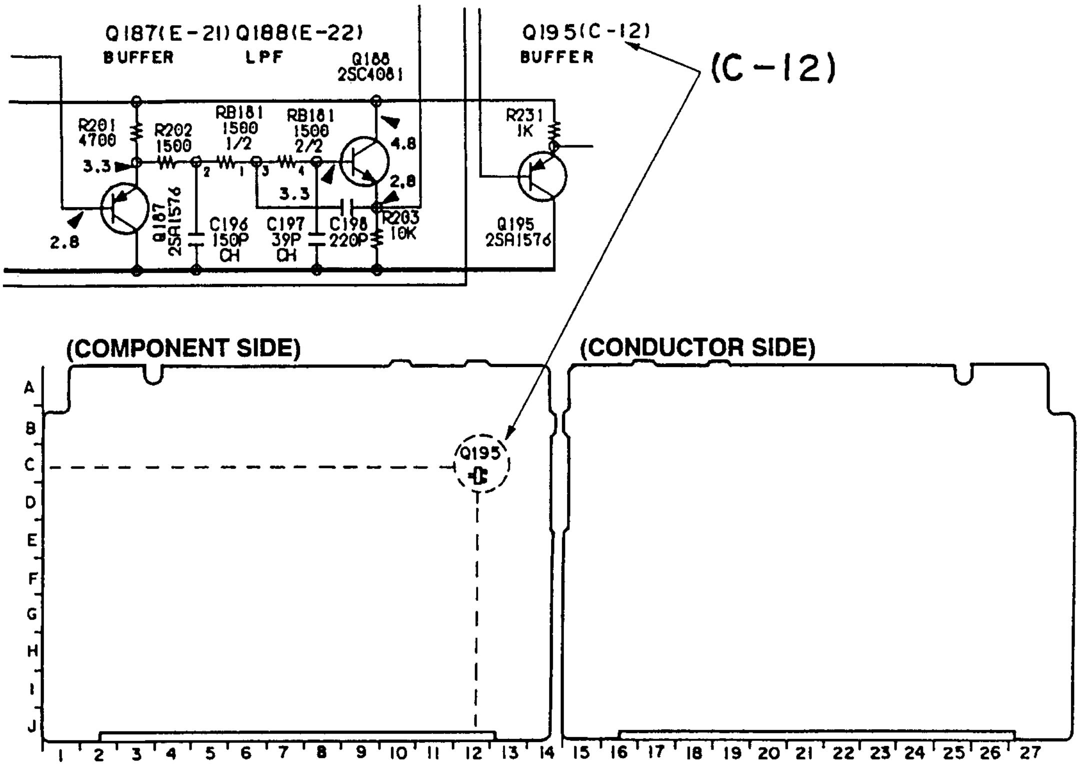
Part code and part name of the semiconductor for correction of the print board is discribed in the space of each print figure. Use this list when ordering parts.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red in schematic diagrams. This enables to find the location on the board easily when servicing.

[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See page 4–36, 4–37 and 4–73.)
This diagram is useful for repair.


Q187(E-21) Q188(E-22)
BUFFER
LPF
Q188
2SC4081
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
3.3
4.8
2.8
3.3
2.8
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
Q195(C-12)
BUFFER
R231
1K
Q195
2SA1576
(C-12)
(COMPONENT SIDE)
(CONDUCTOR SIDE)
A
B
C
D
E
F
G
H
I
J
Q195
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

[HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [✱] mark is flashing in the viewfinder at this time, head clogs are occurred.

Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

Remedy

[Cleaning method using a cleaning tape]

- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

Before You Begin

Checking Your Model Number

The instructions in this manual are for the three models listed below. Before you start reading this manual and operating the unit, check your model number by looking at the bottom of your camcorder. The CCD-TR670E is the model used for illustration purposes. Otherwise, the model name is indicated in the illustrations. Any differences in operation are clearly indicated in the text, for example, "CCD-TR480E only."

As you read through this manual, buttons and settings on the camcorder are shown in capital letters.
e.g. Set the POWER switch to CAMERA.

Types of Differences

Model Number	Viewfinder		Steady shot
	Mono-chrome	Colour	
CCD-TR480E	•		
CCD-TR580E	•		•
CCD-TR670E		•	•

Note on TV Colour Systems

TV colour systems differ from country to country. To view your recordings on a TV, you need a PAL system-based TV. When you want to use a SECAM system-based TV, you will need a PAL/SECAM transcoder (as this is a PAL system based camcorder). Please check the list on page 56 to find out the TV colour system used in your country.

Note on the Supplied RFU Adaptor

Since each country has its own electricity and TV colour system, you may not be able to use the RFU adaptor when you use the camcorder abroad.

Antes de emplear la videocámara

Com pobación de su número de modelo

Las instrucciones de este manual son para los tres modelos indicados más abajo. Antes de empezar a leer este manual y emplear la unidad, compruebe su número de modelo que se encuentra en la parte inferior de su videocámara. En las ilustraciones se emplea el modelo CCD-TR670E. Por lo demás, el nombre del modelo se indica en las ilustraciones. Cualquier diferencia en el método de operación se indica claramente en el texto, por ejemplo, "CCD-TR480E solamente."

Al leer este manual, encontrará que los botones y los ajustes de la videocámara se encuentran mostrados en letras mayúsculas.
Por ejemplo Ponga el conmutador POWER en CAMERA.

Tipos de diferencias

Número de modelo	Visor		Filmación estable
	Blanco y negro	Color	
CCD-TR480E	•		
CCD-TR580E	•		•
CCD-TR670E		•	•

Nota sobre los sistemas de TV en color

Los sistemas de TV en color difieren según los países. Para ver sus grabaciones en un televisor, necesitará un televisor basado en el sistema PAL. Cuando desee emplear un televisor basado en el sistema SECAM, necesitará un transcodificador PAL/SECAM (puesto que esta videocámara está basada en el sistema PAL). Compruebe por favor la lista de la página 56 para encontrar el sistema de TV en color empleado en su país.

Nota sobre el adaptador de RFU suministrado

Puesto que cada país tiene su propio sistema eléctrico y sistema de televisión en color, quizá no poeda emplearse el adaptador de RFU cuando emplee la videocámara en el extranjero.

Precaution on Copyright

Television programmes, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

Precautions on Camcorder Care

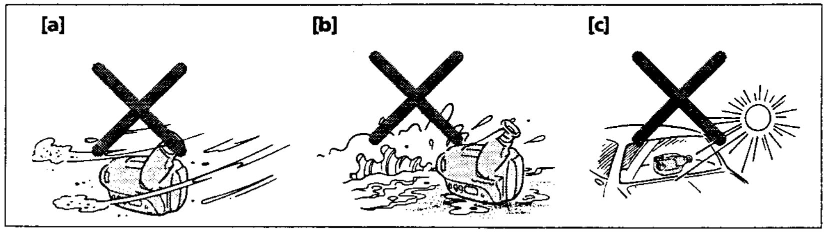
- **Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction and sometimes the malfunction cannot be repaired [a].**
- **Do not let the camcorder get wet. Keep the camcorder away from rain and sea water. Letting the camcorder get wet may cause the unit to malfunction and sometimes the malfunction cannot be repaired [b].**
- **Never leave the camcorder exposed to temperatures above 60°C (140°F), such as in a car parked in the sun or under direct sunlight [c].**

Nota sobre los derechos de autor

Los programas de televisión, las películas, las videocintas y otros materiales pueden estar protegidos por los derechos del autor. La grabación no autorizada de tales materiales podría infringir lo estipulado por las leyes de los derechos del autor.

Precauciones para el cuidado de la videocámara

- **No deje que entre arena en la videocámara. Cuando emplee la videocámara en una playa o en un lugar polvoriento, protéjala de la arena y del polvo. La arena o el polvo pueden causar averías en la unidad que algunas veces resultan irreparables [a].**
- **No deje que se moje la videocámara. Manténgala alejada de la lluvia o del agua del mar. Si deja que la videocámara se moje podrán producirse averías que algunas veces resultan irreparables [b].**
- **Nunca deje la videocámara expuesta a temperaturas por encima de los 60°C, como en el interior de un automóvil estacionado bajo el sol o en un lugar expuesto a la luz solar directa [c].**



Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, video tape, etc.

El contenido de la grabación no puede ser compensado si la grabación o la reproducción no ha sido posible debido al mal funcionamiento de la videocámara, videocasete, etc.

SECTION 1
GENERAL

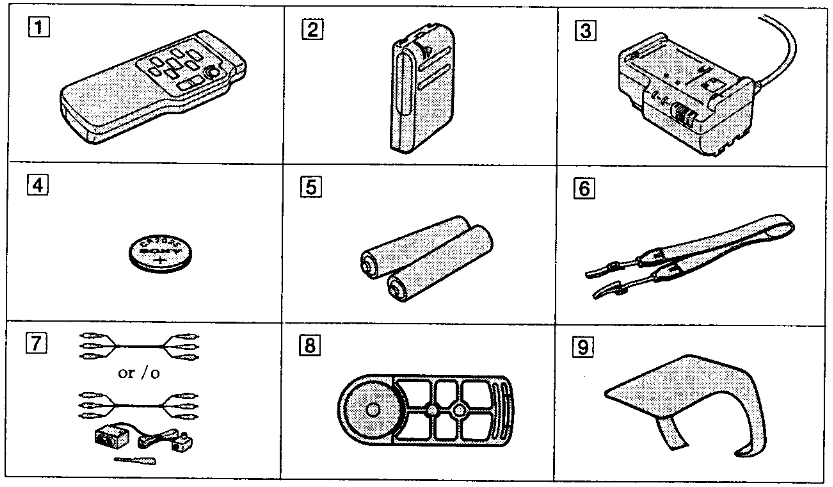
This section is extracted from instruction manual of CCD-TR480E/TR580E/TR670E.

Checking Supplied Accessories

Check that the following accessories are supplied with your camcorder.

Comprobación de los accesorios suministrados

Compruebe si los accesorios siguientes han sido suministrados con su videocámara.



1 **Wireless Remote Commander** (1) (p. 22, 70)
2 **NP-55 Battery pack** (1) (p. 7)
3 **AC-V25A/V25B/V25C AC power adaptor** (1) (p. 7, 24)
4 **CR2025 Lithium Battery** (1) (p. 44) (The lithium battery is already installed in your camcorder.)
5 **R6 (size AA) battery for Remote Commander** (2) (p. 70)
6 **Shoulder strap** (1) (p. 70)
7 **A/V connecting cable or RFU-99E RFU adaptor (supplied with a screwdriver)** (1) (p. 21)
8 **Tripod adaptor** (1) (p. 17)
9 **Shading cover** (**CCD-TR670E** only) (1)

1 **Telemando inalámbrico** (1) (páginas 22, 70)
2 **Batería NP-55** (1) (página 7)
3 **Adaptador de alimentación de CA AC-V25A/V25B/V25C**(1) (páginas 7, 24)
4 **Pila de litio CR2025** (1) (página 44) (La pila de litio ya se encuentra instalada en su videocámara.)
5 **Pilas R6 (tamaño AA) para el telemando** (2) (página 70)
6 **Bandolera** (1) (página 70)
7 **Cable de conexión de A/V o Adaptador de RFU RFU-99E (Con él se suministra un destornillador.)** (1) (página 21)
8 **Adaptador del trípode** (1) (página 17)
9 **Sombrerete** (**CCD-TR670E** solamente) (1)

Getting Started

Charging and Installing the Battery Pack

Before using your camcorder, you first need to charge and install the battery pack. To charge the battery pack, use the supplied AC power adaptor.

Charging the Battery Pack

Charge the battery pack on a flat surface without vibration.

(1) Connect the mains lead to mains.
(2) Align the right side of the battery pack with the line on the AC power adaptor, then slide the battery pack in the direction of the arrow.
(3) Set the selector to CHARGE. The CHARGE lamp (orange) lights up. Charging begins.

When charging is completed, the CHARGE lamp goes out. Set the selector to the centre position and unplug the unit from mains. Then remove the battery pack and install it on the camcorder.
To stop charging, set the selector to the centre position.

Preparación de la videocámara

Carga e instalación de la batería

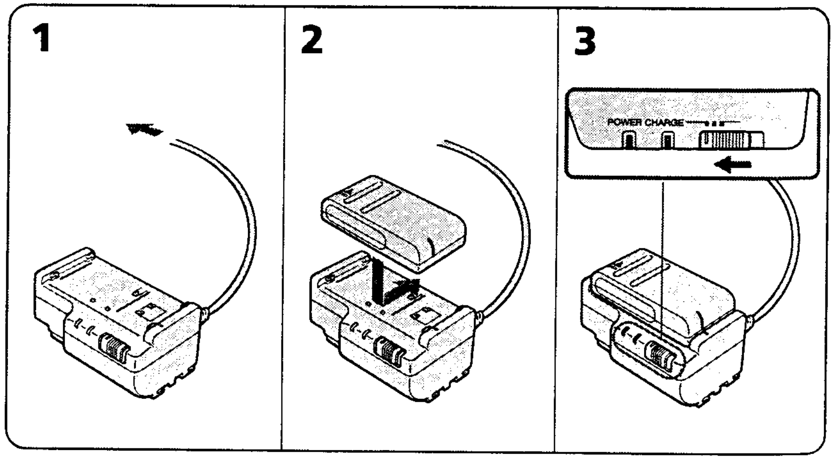
Antes de utilizar la videocámara tendrá que cargar e instalar la batería. Para cargar la batería, utilice el adaptador de alimentación de CA suministrado.

Carga de la batería

Cargue la batería en un lugar nivelado sin vibraciones.

(1) Conecte el cable de alimentación a una toma de corriente.
(2) Alinee el lado derecho de la batería con la línea del adaptador de alimentación de CA y luego deslice la batería en la dirección de la flecha.
(3) Ponga el selector en CHARGE. La lámpara CHARGE (anaranjada) se encenderá. La carga comenzará.

Cuando termine la carga, la lámpara CHARGE se apagará. Ponga el selector en la posición central y desenchufe la unidad de la toma de corriente. Luego, retire la batería e instálela en la videocámara.
Para detener la carga, ponga el selector en la posición central.



See the next page for further information.
Vea la página siguiente para más información.

Charging and Installing the Battery Pack

Charging Time

Battery pack	Charging time*
NP-55 (supplied)	70
NP-77H/77HD	170
NP-55H	85

* Approximate minutes to charge an empty battery pack using the supplied AC power adaptor. (Lower temperatures require a longer charging time.)

Battery Life

CCD-TR480E

Battery pack	Typical recording time**	Continuous recording time***
NP-55 (supplied)	30	60
NP-77H/77HD	80	150
NP-55H	35	70

CCD-TR580E

Battery pack	Typical recording time**	Continuous recording time***
NP-55 (supplied)	30	55
NP-77H/77HD	75	145
NP-55H	35	65

CCD-TR670E

Battery pack	Typical recording time**	Continuous recording time***
NP-55 (supplied)	25	50
NP-77H/77HD	75	140
NP-55H	30	60

** Approximate minutes when recording while you repeat recording start/stop or zooming and turning the power on/off. The actual battery life may be shorter.

*** Approximate continuous recording time indoors.

Carga e instalación de la batería

Tiempo de carga

Batería	Tiempo de carga*
NP-55 (suministrada)	70
NP-77H/77HD	170
NP-55H	85

* Minutos aproximados para cargar una batería descargada empleando el adaptador de CA suministrado. (A bajas temperaturas se requiere un tiempo de carga más largo.)

Duración de la batería

CCD-TR480E

Batería	Tiempo de grabación normal**	Tiempo de grabación continua***
NP-55 (suministrada)	30	60
NP-77H/77HD	80	150
NP-55H	35	70

CCD-TR580E

Batería	Tiempo de grabación normal**	Tiempo de grabación continua***
NP-55 (suministrada)	30	55
NP-77H/77HD	75	145
NP-55H	35	65

CCD-TR670E

Batería	Tiempo de grabación normal**	Tiempo de grabación continua***
NP-55 (suministrada)	25	50
NP-77H/77HD	75	140
NP-55H	30	60

** Minutos aproximados cuando se graba repitiendo el inicio/parada de grabación o se usa el zoom y la conexión/desconexión de la alimentación. La duración real de la batería puede que sea más corta.

*** Tiempo aproximado de grabación continua en interiores.

Important!

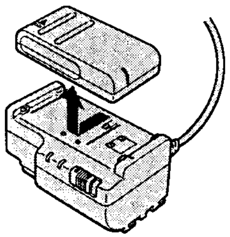
Use the battery completely before recharging!

Before you recharge the battery pack, make sure the battery has been used up (discharged) completely. Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.

To use up the battery, remove the cassette and slide the POWER switch to CAMERA with the battery pack attached, and leave the camcorder until the ▭ indicator flashes and the red lamp flashes rapidly in the viewfinder.

To Remove the Battery Pack

Slide the battery pack in the direction of the arrow.



Notes on charging the battery pack

- The POWER lamp will remain lit for a while even if the battery pack is removed and the mains lead is unplugged after charging the battery pack. This is normal.
- If the POWER lamp does not light, set the selector to the centre position and disconnect the mains lead. After about one minute, reconnect the mains lead and set the selector to CHARGE again.
- You cannot operate the camcorder using the AC power adaptor while charging the battery pack.

See the next page for further information.

¡Importante!

¡Emplee la batería hasta descargarla completamente antes de volver a cargarla!

Antes de cargar la batería, asegúrese de que ésta haya sido utilizada (esté descargada) completamente. La carga repetida sin que la batería esté completamente descargada causará una disminución en su capacidad de carga. Sin embargo, la capacidad original de la batería podrá recuperarse si la emplea hasta agotarla y luego la vuelve a cargar de nuevo completamente.

Para descargar la batería, extraiga el videocasete y ponga el conmutador POWER en CAMERA con la batería instalada, y deje así la videocámara hasta que el indicador ▭ parpadee y la lámpara roja parpadee rápidamente en el visor.

Para retirar la batería

Deslice la batería en la dirección de la flecha.

Notas sobre la carga de la batería

- La lámpara POWER permanecerá encendida durante un rato a pesar de que se extraiga la batería y se desenchufe el cable de alimentación después de finalizar la carga. Esto es normal.
- Si la lámpara POWER no se enciende, ponga el selector en la posición central y desconecte el cable de alimentación. Después de aproximadamente un minuto, vuelva a conectar el cable de la alimentación y ponga otra vez el selector en CHARGE.
- No podrá operar la videocámara empleando el adaptador de CA mientras se esté cargando la batería.

Vea la página siguiente para más información.

Charging and Installing the Battery Pack

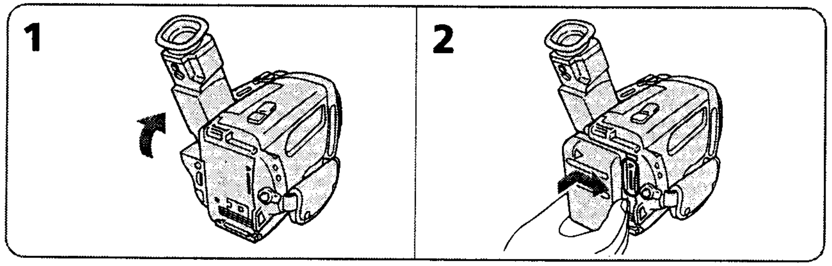
Carga e instalación de la batería

Installing the Battery Pack

(1) Lift up the viewfinder.
(2) Align the right side of the battery pack with the white line on the camcorder, and slide the battery pack to the right.

Instalación de la batería

(1) Levante el visor.
(2) Alinee el lado derecho de la batería con la línea blanca de la videocámara, y deslice la batería hacia la derecha.

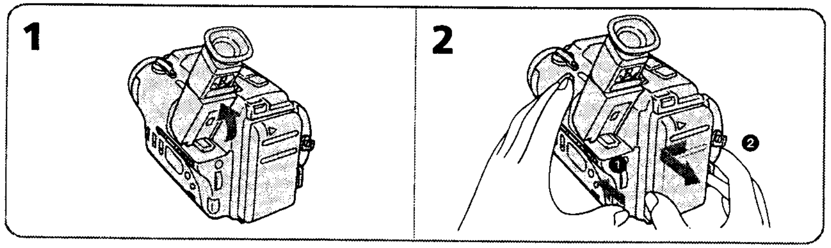


To Remove the Battery Pack

(1) Lift up the viewfinder.
(2) While pressing BATT, slide the battery pack to the left.

Para retirar la batería

(1) Levante el visor.
(2) Mientras presiona BATT, deslice la batería hacia la izquierda.

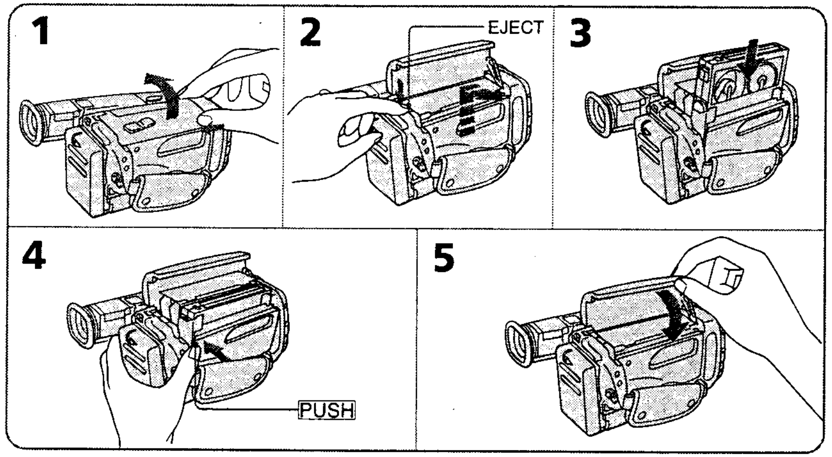


Inserting a Cassette

Colocación de un videocasete

Make sure that the power source is installed.
(1) While sliding the release knob in the direction of the arrow, lift up the lid.
(2) Press EJECT. The cassette compartment automatically lifts up and opens.
(3) Insert a cassette with the window facing out.
(4) Close the cassette compartment by pressing the "PUSH" mark on the cassette compartment. The cassette compartment automatically goes down.
(5) Close the lid.

Asegúrese de que la fuente de alimentación esté instalada.
(1) Mientras desliza la perilla de expulsión en la dirección de la flecha, levante la tapa.
(2) Presione EJECT. El compartimiento del videocasete se elevará automáticamente y se abrirá.
(3) Introduzca un videocasete con la ventanilla hacia afuera.
(4) Cierre el compartimiento del videocasete presionando la marca "PUSH" en el mismo compartimiento. El compartimiento del videocasete bajará automáticamente.
(5) Cierre la tapa.



To Eject the Cassette

While sliding the release knob in the direction of the arrow, lift up the lid of the cassette holder and press EJECT.

Para expulsar el videocasete

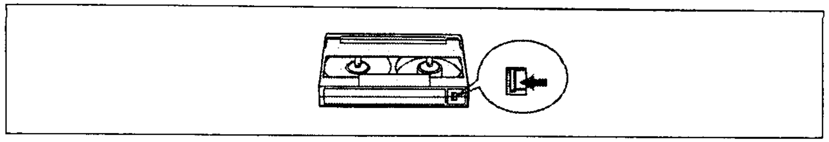
Mientras desliza la perilla de expulsión en la dirección de la flecha, levante la tapa del portavideocasete y presione EJECT.

To Prevent Accidental Erasure

Slide the tab on the cassette to expose the red mark. If you try to record with the red mark exposed, the 📼 and ⏏ indicators flash in the viewfinder, and you cannot record.
To re-record on this tape, slide the tab back out covering the red mark.

Para prevenir el borrado accidental

Deslice la lengüeta del videocasete de forma que la marca roja quede expuesta. Si trata de grabar con la marca roja expuesta, los indicadores 📼 y ⏏ parpadearán en el visor y no podrá grabar.
Para volver a grabar en la misma cinta, deslice la lengüeta para cubrir la marca roja.



Basic Operations

Camera Recording

Operaciones básicas

Grabación con la videocámara

Make sure that the power source is installed and a cassette is inserted. The date is automatically recorded for 10 seconds after you start recording (AUTO DATE feature). This feature works only once a day.
Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working correctly.

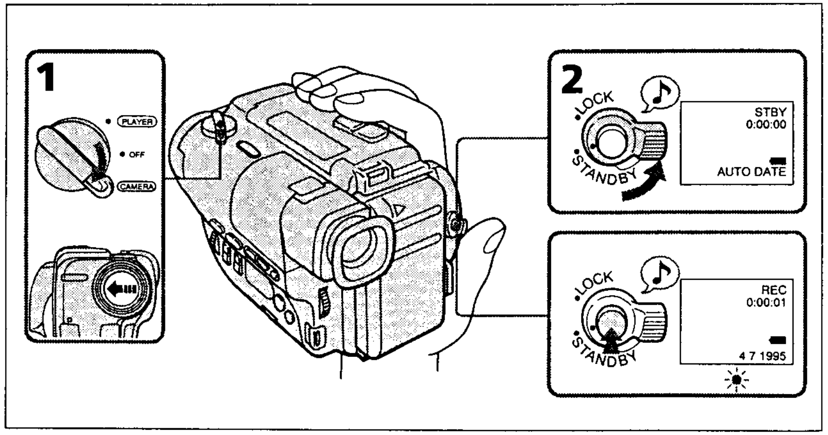
(1) While pressing the small green button on the POWER switch, turn it to CAMERA.
(2) Turn STANDBY up.
(3) Press START/STOP. The camcorder starts recording. The "REC" indicator appears and the red lamp lights up in the viewfinder.

You can also select Recording mode, SP (standard play) mode or LP (long play) mode. Set REC MODE in the menu system (p. 39) according to the length of your planned recording before you start.

Asegúrese de que la fuente de alimentación esté instalada y de que se haya introducido un videocasete. La fecha se grabará automáticamente durante 10 segundos después de empezar a grabar (característica AUTO DATE). Esta característica sólo funciona una vez al día.
Antes de realizar grabaciones irrepetibles, quizá desee hacer una grabación de prueba para asegurarse de que la videocámara funciona correctamente.

(1) Mientras presiona el pequeño botón verde del conmutador POWER, gírelo hasta CAMERA.
(2) Gire STANDBY hacia arriba.
(3) Presione START/STOP. La videocámara empezará a grabar. En el visor aparecerá el indicador "REC" y se encenderá la lámpara roja.

También podrá seleccionar el modo de grabación: el modo SP (reproducción normal) o el mode LP (reproducción de larga duración). Antes de empezar a grabar, ponga REC MODE del sistema de menú (página 39) según la duración de grabación planeada.



To Stop Recording Momentarily [a]

Press START/STOP again. The "STBY" indicator appears in the viewfinder (**Standby mode**).

To Finish Recording [b]

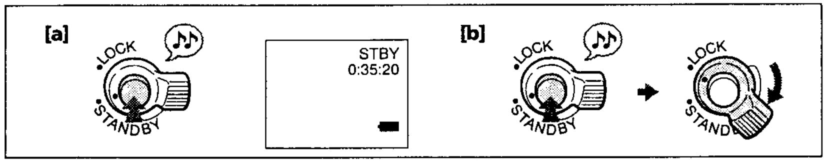
Press START/STOP again. Turn STANDBY down and turn the POWER switch to OFF. Then, eject the cassette (p. 11) and remove the battery (p. 10).

Para parar momentáneamente la grabación [a]

Vuelva a presionar START/STOP. El indicador "STBY" aparecerá en el visor (**modo de espera**).

Para finalizar la grabación [b]

Vuelva a presionar START/STOP. Gire STANDBY hacia abajo y gire el conmutador POWER hasta OFF. Luego, expulse el videocasete (página 11) y retire la batería (página 10).

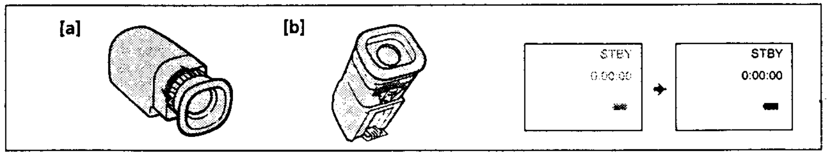


To Focus the Viewfinder Lens

If you cannot see the indicators in the viewfinder clearly, or after someone else has used the camcorder, focus the viewfinder lens.
When using a monochrome viewfinder, turn the viewfinder lens adjustment ring so that the indicators in the viewfinder come into sharp focus **[a]**. When using a colour viewfinder, move the viewfinder lens adjustment lever so that the indicators in the viewfinder come into sharp focus **[b]**.

Para enfocar la lente del visor

Si usted no puede ver claramente los indicadores del visor, o después de que otra persona haya usado la videocámara, enfoque la lente del visor. Cuando utilice un visor en blanco y negro, gire el anillo de ajuste de la lente del visor para que los indicadores del visor se puedan ver claramente **[a]**. Cuando utilice un visor en color, mueva la palanquilla de ajuste del visor para que los indicadores del visor se puedan ver claramente **[b]**.



Note on Standby mode

If you leave the camcorder in Standby mode for 5 minutes while the cassette is inserted, the camcorder turns off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, turn STANDBY down once and turn it up again. To start recording, press START/STOP.

Note on recording

When you record from the beginning of a tape, run the tape for about 15 seconds before starting the actual recording. This will ensure that you won't miss any start-up scenes when you play back the tape.

See the next page for further information.

Nota sobre el modo de espera

Si deja la videocámara en el modo de espera durante 5 minutos con el videocasete dentro, la videocámara se apagará automáticamente. Esto evita que se descargue la batería y se desgaste la cinta. Para reanudar el modo de espera, gire STANDBY hacia abajo una vez y luego vuelva a girarlo hacia arriba. Para comenzar a grabar, presione START/STOP.

Nota sobre la grabación

Cuando grabe desde el principio de una cinta, haga que ésta avance durante unos 15 segundos antes de empezar a grabar. Así no perderá ninguna escena del principio de la cinta cuando la reproduzca.

Vea la página siguiente para más información.

Camera Recording

Grabación con la videocámara

1-6

Recording mode

This camcorder records in the SP mode (approximately 20 mm/second) and in the LP mode (approximately 10 mm/second) and can play back in the SP mode and LP mode. The quality of the playback picture in the LP mode, however, will not be as good as that in the SP mode.

Note on the tape counter

The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET.

Note on beep sound

As indicated with ♪ in the illustrations, a beep sounds when you turn the power on or when you start recording and two beeps sound when you stop recording, confirming the operation. Several beeps also sound as a warning of any unusual condition of the camcorder (p. 75).
Note that the beep sound is not recorded on the tape. If you do not want to hear the beep sound, select "OFF" in the menu system (p. 39).

Note on the AUTO DATE feature

The clock is already set at the factory; to Sydney time for Australia, to Tokyo time for the models sold in Japan and to Hong Kong time for the other countries. You can reset the clock in the menu system (p. 46). You can change the AUTO DATE settings by selecting ON or OFF in the menu system.
The AUTO DATE feature works once a day. However, the date may automatically appear more than once a day when:

- you reset the date and time.
- you eject and insert the tape again.
- you stop recording within 10 seconds.
- you set AUTO DATE to OFF once and set to ON again in the menu system.

When moving from indoors to outdoors (or vice versa)

Turn STANDBY up and point the camcorder at a white object for about 15 seconds so that the white balance is properly adjusted.

Modo de grabación

Esta videocámara graba en el modo SP (20 mm/segundo aproximadamente) y en el mode LP (10 mm/segundo aproximadamente) y también puede reproducir en estos dos modos. Sin embargo, la calidad de la imagen en el modo LP no será tan buena como la del modo SP.

Nota sobre el contador de cinta

El contador de cinta indica el tiempo de grabación o de reproducción. Empléelo como guía. Habrá un retardo de varios segundos con respecto al tiempo real. Para poner el contador a cero, presione COUNTER RESET.

Nota sobre los sonidos de pitidos

Como se indica mediante el símbolo ♪ en las ilustraciones, cuando conecte la alimentación o empiece a grabar sonará un pitido, y cuando pare la grabación sonarán dos pitidos, confirmando así la operación. Sonarán tambien varios pitidos como aviso de la existencia de alguna irregularidad en la videocámara (página 75).
Tenga en cuenta que los pitidos no se grabarán en la cinta. Si no desea escuchar los pitidos, seleccione "OFF" en el sistema de menú (página 39).

Nota sobre la característica AUTO DATE

El reloj ya ha sido ajustado en fábrica; a la hora de Sidney para Australia, a la de Tokio para los modelos vendidos en Japón y a la de Hong Kong para los demás países. Podrá reajustar el reloj en el sistema de menú (página 46). Podrá cambiar los ajustes de AUTO DATE seleccionando ON u OFF en el sistema de menú.
La característica AUTO DATE funciona una vez al día. Sin embargo, la fecha podrá aparecer automáticamente más de una vez al día cuando:

- reponga la fecha o la hora.
- expulse la cinta y la introduzca de nuevo.
- pare la grabación antes de que pasen 10 segundos.
- ponga AUTO DATE en OFF una vez y lo vuelva a poner en ON en el sistema de menú.

Cuando pase de interiores a exteriores (o viceversa)

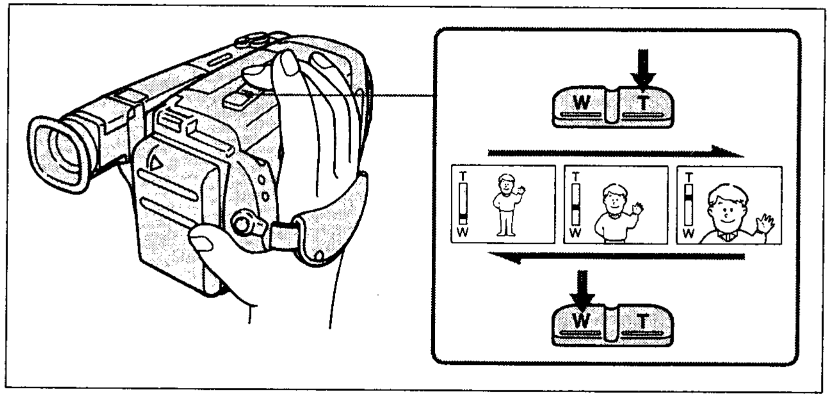
Gire STANDBY hacia arriba y dirija la videocámara hacia un objeto blanco durante unos 15 segundos para que el balance de blancos se ajuste correctamente.

Using the Zoom Feature

Zooming is a recording technique that lets you change the size of the subject in the scene.
For more professional-looking recordings, use the zoom function sparingly.
"T" side: for telephoto (subject appears closer)
"W" side: for wide-angle (subject appears farther away)

Empleo del zoom

"Zooming" es una técnica de grabación que le permite cambiar el tamaño del motivo en la escena. Para que sus grabaciones tengan una apariencia más profesional, emplee poco el zoom.
Lado "T": para telefoto (el motivo aparece más próximo)
Lado "W": para gran angular (el motivo aparece más alejado)



Zooming Speed (Dual speed zooming)

Press the power zoom button firmly for a high-speed zoom, press it softly for a relatively slow zoom.

When you shoot a subject using a telephoto zoom

If you cannot get a sharp focus while in extreme telephoto zoom, press the "W" side of the power zoom button until the focus is sharp. You can shoot a subject that is at least about 100 cm (3 1/4 feet) away from the lens surface in the telephoto position, or about 1 cm (1/2 in) in the wide-angle position.

Velocidad del zoom (zoom de dos velocidades)

Presione firmemente el botón del zoom motorizado para emplear una velocidad de zoom alta; presiónelo suavemente para una velocidad de zoom relativamente lenta.

Cuando filme un motivo empleando el zoom en telefoto

Si no puede enfocar con nitidez empleando el ajuste máximo del zoom en telefoto, presione el lado "W" del botón del zoom motorizado hasta que el motivo quede enfocado nítidamente. Podrá filmar un motivo que se encuentre a un mínimo de 100 cm de la superficie del objetivo en la posición de telefoto, o a aproximadamente 1 cm de la superficie del objetivo en la posición de gran angular.

See the next page for further information.

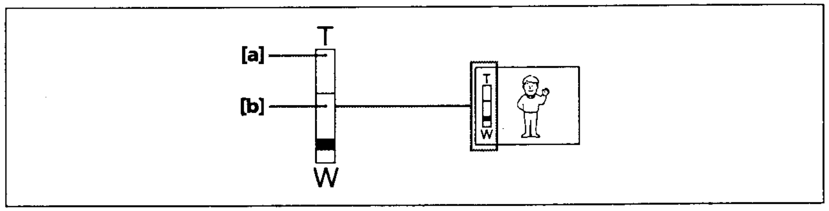
Vea la página siguiente para más información.

Notes on Digital Zoom

- More than 12x zoom is performed digitally, and the picture quality deteriorates as you go toward the T side. If you do not want to use the digital zoom, set the D ZOOM function to OFF in the menu system (p. 39).
- The horizontal bar in the power zoom indicator separates the digital zooming zone (above the bar **[a]**) and the optical zooming zone (under the bar **[b]**). If you set the D ZOOM function to OFF, the part above the bar disappears.

Notas sobre el zoom digital

- El zoom de más de 12x se realizará digitalmente, y la calidad de la imagen se deteriorará al avanzar hacia el lado T. Si no desea emplear el zoom digital, desactive la función D ZOOM en el sistema de menú (página 39).
- La barra horizontal del indicador del zoom motorizado separa la zona del zoom digital (encima de la barra **[a]**) y la zona de zoom óptico (debajo de la barra **[b]**). Si desactiva la función D ZOOM, la parte ubicada encima de la barra desaparecerá.

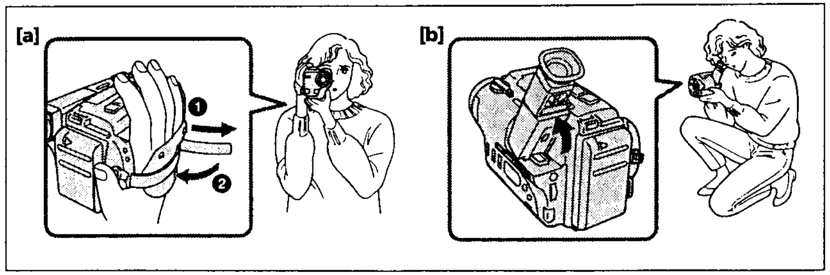


Hints for Better Shooting

Sugerencias para filmar mejor

For hand-held shots, you'll get better results by holding the camcorder according to the following suggestions:

Cuando filme sujetando la cámara con las manos, los mejores resultados los obtendrá sujetándola según las sujerencias siguientes:



- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb **[a]**.

- Sujete firmemente la videocámara y asegúrela con la correa de la empuñadura para poder manejar fácilmente los controles con su dedo pulgar **[a]**.

- Place your right elbow against your side.
- Place your left hand under the camcorder to support it.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting recording angle. Lift the viewfinder up for recording from a low position **[b]**.

Place the camcorder on a flat surface or use a tripod

Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder (p. 67).

If the camcorder is difficult to balance on a tripod, use the supplied tripod adaptor. Attach the tripod adaptor to the camcorder by turning the screw **[c]**. The adaptor has a screw hole for a tripod. Do not leave the tripod adaptor on the camcorder if the camcorder is not mounted on a tripod.

When attaching a non-Sony tripod, make sure that the length of the tripod screw is less than 6.5 mm (9/32 in). Otherwise, the screw may damage the inner parts of the camcorder.

Cautions on the viewfinder

- Do not pick up the camcorder by the viewfinder **[d]**.
- Do not place the camcorder so as to point the viewfinder toward the sun. The inside of the viewfinder may be deformed. Be careful when placing the camcorder under sunlight or by the window **[e]**.

- Ponga el codo derecho contra su costado.
- Ponga su mano izquierda debajo de la videocámara para apoyarla.
- Ponga su ojo firmemente contra el ocular del visor.
- Emplee el cuadro del visor como guía para determinar el plano horizontal.
- Podrá grabar también desde una posición baja para obtener un interesante ángulo de grabación. Levante el visor para grabar desde una posición baja **[b]**.

Ponga la videocámara sobre una superficie plana o emplee un trípode

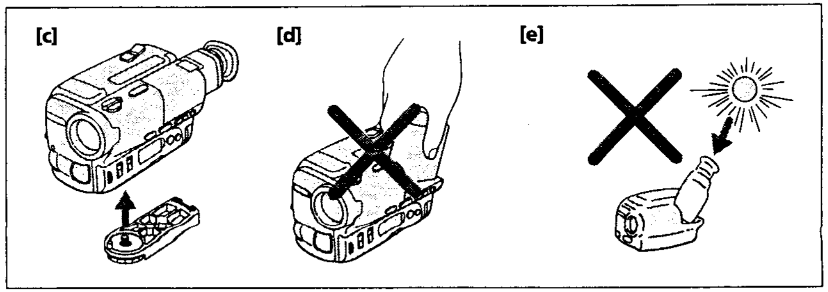
Pruebe a poner la videocámara sobre una mesa o cualquier otra superficie plana de altura apropiada. Si dispone de un trípode para cámara fotográfica también podrá emplearlo con la videocámara (página 67).

Si resulta difícil mantener el equilibrio de la videocámara en un trípode, utilice el adaptador de trípode suministrado. Sujete el adaptador de trípode a la videocámara girando el tornillo **[c]**. El adaptador tiene un agujero roscado para un trípode. No deje el adaptador de trípode en la videocámara si ésta no está montada en un trípode.

Cuando emplee un trípode que no sea de Sony, asegúrese de que la longitud de su tornillo sea inferior a 6,5 mm. En caso contrario, el tornillo podría dañar las partes internas de la videocámara.

Precauciones con el visor

- No tome la videocámara por el visor **[d]**.
- No ponga la videocámara de forma que el visor quede orientado hacia el sol. El interior del visor podría deformarse. Tenga cuidado cuando ponga la videocámara bajo el sol o cerca de una ventana **[e]**.



Checking the Recorded Picture

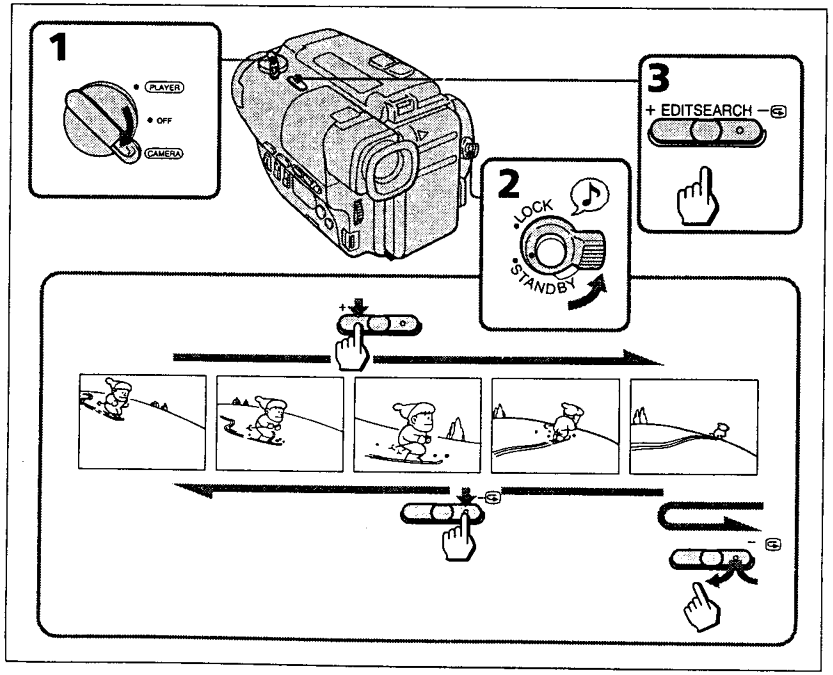
Comprobación de la imagen grabada

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder.

(1) While pressing the small green button on the POWER switch, turn it to CAMERA.
(2) Turn STANDBY up.
(3) Press the – (⊜) side of EDITSEARCH momentarily; the last few seconds of the recorded portion plays back (**Rec Review**). Hold down the – side of EDITSEARCH until the camcorder goes back to the scene you want. The last recorded portion is played back. To go forward, hold down the + side (**Edit Search**).

Empleando la función EDITSEARCH podrá revisar la última escena grabada o comprobar la imagen grabada en el visor.

(1) Mientras presiona el pequeño botón verde del conmutador POWER, gírelo hasta CAMERA.
(2) Gire STANDBY hacia arriba.
(3) Presione momentáneamente el lado – (⊜) de EDITSEARCH; los últimos segundos de la parte grabada se reproducirán (**revisión de grabación**).
Mantenga presionado del lado – de EDITSEARCH hasta que la videocámara retroceda hasta la escena que desee. La última parte grabada se reproducirá. Para avanzar, mantenga presionado el lado + (**búsqueda de edición**).



To Stop Playback

Release EDITSEARCH.

To Begin Re-recording

Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the tape, the transition between the last scene you recorded and the next scene you record will be smooth.

To Monitor the Sound While Viewing the Playback Picture in the Viewfinder

Connect headphones (not supplied) to the ∩ jack. Play back the tape in PLAYER mode (p. 22).

Para cesar la reproducción

Suelte EDITSEARCH.

Para reanudar la grabación

Presione START/STOP. La reanudación de la grabación comenzará desde el punto donde dejó de presionar EDITSEARCH. Siempre que no expulse la cinta, la transición entre la última escena que haya grabado y la escena siguiente que piense grabar se realizará uniformemente.

Para escuchar el sonido durante la contemplación de las imágenes reproducidas en el visor

Conecte unos auriculares (no suministrados) a la toma ∩. Reproduzca la cinta en el modo PLAYER (página 22).

Connections for Playback

Conexiones para la reproducción

You can use this camcorder as a VCR by connecting it directly to your TV for playback. There are some ways to connect the camcorder to your TV. When monitoring the playback picture by connecting the camcorder to your TV, we recommend you to use the mains for the power source (p. 24).

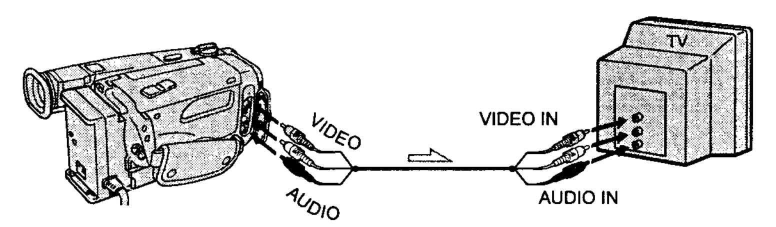
Podrá utilizar esta videocámara como una videograbadora conectándola directamente a su televisor para la reproducción. Hay algunas formas de conectar la videograbadora a su televisor. Cuando compruebe la imagen de reproducción conectando la videocámara a su televisor, le recomendamos que utilice la corriente del hogar como fuente de alimentación (página 24).

Connecting to a TV with Video/Audio Input Jacks

Connect the camcorder to the inputs on the TV by using the supplied A/V connecting cable. Set the TV/VCR selector on the TV to VCR.

Conexión a un televisor con tomas de entrada de vídeo/audio

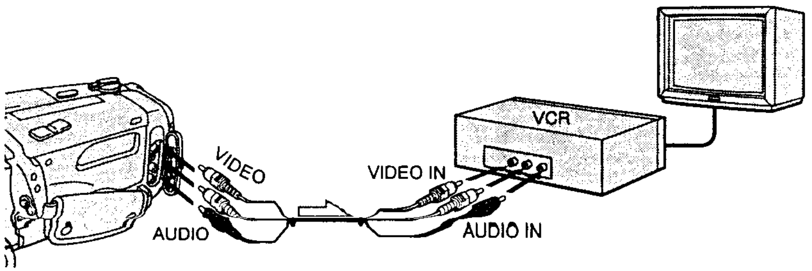
Conecte la videocámara a las tomas de entrada del televisor empleando el cable de audio/vídeo suminstrado. Ponga el selector TV/VCR del televisor en VCR.



⇨ : Signal flow/Dirección de las señales

If a VCR is already connected to your TV
Connect the camcorder to the LINE IN inputs on the VCR by using the supplied A/V connecting cable. Set the input selector on the VCR to LINE. Set the TV/VCR selector on the TV to VCR.

Si una videograbadora ya está conectada a su televisor
Conecte la videocámara a las entradas LINE IN de la videograbadora empleando el cable de conexión A/V suministrado. Ponga el selector de entrada de la videograbadora en LINE. Ponga el selector TV/VCR del televisor en VCR.



⇨ : Signal flow/Dirección de las señales

If your TV or VCR is a monaural type
Connect only the white plug for audio on both the camcorder and the TV or the VCR. With this connection, the sound is monaural.

Si su televisor o videgrabadora es de tipo monofónico
Conecte solamente la clavija blanca para audio a ambos la videocámara y al televisor o videograbadora. Con esta conexión, al sonido será monofónico.

Connecting to a TV without Video/Audio Input Jacks

— For the customers supplied with the RFU-99E RFU adaptor

Connect the camcorder to your TV by using the supplied RFU adaptor. Set the TV system selector on the RFU adaptor to G or I according to the TV system in your country*. Turn on the TV and select a programme position between UHF channels 30 and 39 (ex. channel 32) that is not used to receive a TV station.

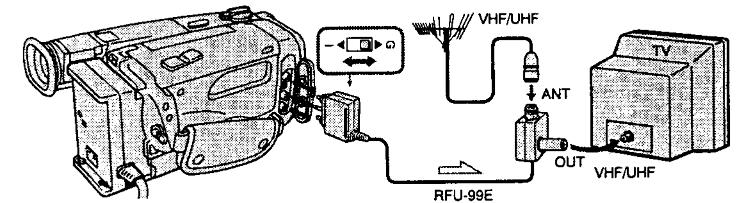
* System G: Continental Europe
System I: Great Britain, Hong Kong, South Africa

Conexión a un televisor desprovisto de tomas de entrada de vídeo/audio

— Para los clientes suministrados con el adaptador de RFU RFU-99E

Conecte la videocámara al televisor utilizando el adaptador de RFU suministrado. Ponga el selector de sistema de TV del adaptador de RFU en G o I según sea el sistema de TV empleado en su país*. Conecte la alimentación del televisor y seleccione un canal entre 30 y 39 de UHF (p. ej. canal 32) que no se emplee para recibir una emisora de televisión.

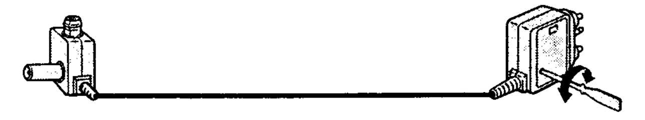
* Sistema G: Para Europa continental
Sistema I: Reino Unido, Hong Kong, Suráfrica



⇨ : Signal flow/Dirección de las señales

If the playback picture is deteriorated
Turn the RF channel setting screw of the RFU adaptor slowly with the supplied screwdriver so that the playback picture is clearly displayed on the TV screen.

Cuando la imagen reproducida se distorsione
Gire lentamente el tornillo de ajuste de canal de RF situado en el adaptador de RFU con el destornillador suministrado de forma que la imagen reproducida se visualice claramente en la pantalla del televisor.



1-10

Playing Back a Tape

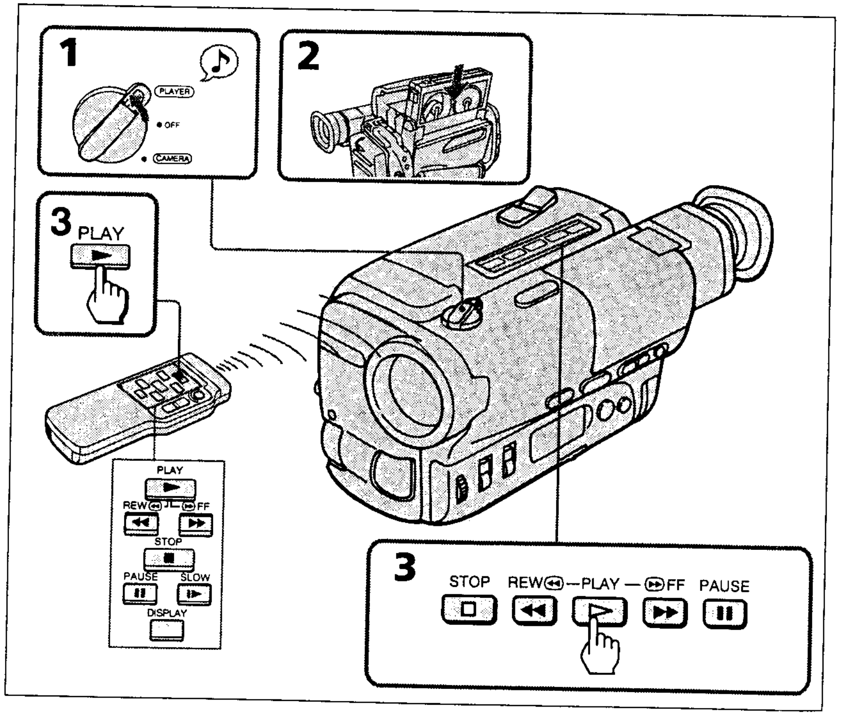
Reproducción de una cinta

You can monitor the playback picture in the viewfinder. You can also monitor the picture on a TV screen, after connecting the camcorder to a TV or VCR (p. 20, 21). You can use the supplied Remote Commander to control playback.

(1) While pressing the small green button on the POWER switch, turn it to PLAYER. The tape transport buttons light up.
(2) Insert the recorded tape with the window facing out.
(3) Press ▷. Playback starts.

Podrá comprobar la imagen de reproducción en el visor. También podrá comprobarla en la pantalla de un televisor, después de haber conectado la videocámara a un televisor o a una videograbadora (páginas 20, 21). El telemando suministrado podrá emplearse también para controlar la reproducción.

(1) Mientras presiona el pequeño botón verde del conmutador POWER, gírelo hasta PLAYER. Los botones de transporte de la cinta se encenderán.
(2) Introduzca una cinta grabada con la ventanilla hacia afuera.
(3) Presione ▷. La reproducción comenzará.



To stop playback, press □.
To rewind the tape, press ◀◀.
To advance the tape rapidly, press ▶▶.

Para parar la reproducción, presione □.
Para rebobinar la cinta, presione ◀◀.
Para avanzar la cinta rápidamente, presione ▶▶.

Various Playback Modes

To view a still picture (Playback pause)

Press ❚❚ during playback. To resume playback, press ❚❚ or ▷.

To locate a scene (Picture search)

Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor the high-speed picture while advancing the tape or rewinding (Skip scan)

Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▷.

To view the picture in a sequence of stop-motion images

Press EDITSEARCH in playback pause mode. If you keep pressing EDITSEARCH, you can view the picture play back in the forward (+) or reverse (–) direction.

To view the picture at 1/5 speed (Slow Playback) (only with the Remote Commander)

Press ❚▶ on the Remote Commander during playback. To resume normal playback, press ▶. If slow playback lasts for about 1 minute, it shifts to normal speed automatically.

Notes on playback

- Streaks appear and the sound is muted in the various playback modes.
- When playback pause mode lasts for 5 minutes, the camcorder automatically enters stop mode.

To display the viewfinder screen indicators on the TV

Press DISPLAY on the Remote Commander. To erase the indicators, press DISPLAY again.

To select the playback sound

Change the "HiFi SND" mode setting in the menu system (p. 39).

Varios modos de reproducción

Para ver una imagen fija (pausa de reproducción)

Presione ❚❚ durante la reproducción. Para reanudar la reproducción, presione ❚❚ o ▷.

Para localizar una escena (búsqueda de imagen)

Mantenga presionado ◀◀ o ▶▶ durante la reproducción. Para reanudar la reproducción normal, deje de presionar el botón.

Para comprobar la imagen a alta velocidad mientras la cinta avanza o se rebobina (exploración con salto)

Mantenga presionado ◀◀ mientras rebobina la cinta o ▶▶ mientras la avanza. Para reanudar la reproducción normal, presione ▷.

Para ver la reproducción en una secuencia de imágenes paradas y en movimiento

Presione EDITSEARCH en el modo de pausa de reproducción. Si mantiene presionado EDITSEARCH, podrá ver la imagen de reproducción en la dirección de avance (+) o de retroceso (–).

Para ver la imagen a 1/5 de la velocidad normal (reproducción lenta) (sólo con el telemando)

Presione ❚▶ del telemando durante la reproducción. Para reanudar la reproducción normal, pulse ▶. Si la reproducción lenta dura 1 minuto aproximadamente, ésta cambiará automáticamente a la velocidad de reproducción normal.

Notas sobre la reproducción

- En los diversos modos de reproducción aparecerán rayas en la imagen y el sonido se silenciará.
- Cuando el modo de pausa de reproducción dure más de 5 minutos, la videocámara se pondrá automáticamente en el modo de parada.

Para mostrar los indicadores de la pantalla del visor en el televisor

Presione DISPLAY del telemando. Para borrar los indicadores, presione DISPLAY de nuevo.

Para seleccionar el sonido de reproducción

Cambie el ajuste del modo "HiFi SND" en el sistema de menu (página 39).

1-11

Advanced Operations

Using Alternative Power Sources

You can choose any of the following power sources for your camcorder: battery pack (p. 7), the mains, and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	The mains	AC power adaptor AC-V25A/V25B/V25C(supplied), AC-S10, AC-V55
Outdoors	Battery pack	Battery pack NP-55 (supplied), NP-77H/77HD, NP-55H
In the car	12 V or 24 V car battery	DC pack DCP-77

Note on power sources

Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted tape. If this happens, restore the power supply again immediately.

Operaciones avanzadas

Empleo de fuentes de alimentación alternativas

Podrá elegir cualquiera de las fuentes de alimentación siguientes para su videocámara: batería (página 7), corriente del hogar y batería de automóvil de 12/24 V. Elija la fuente de alimentación apropiada según el lugar donde vaya a emplear la videocámara.

Lugar	Alimentación	Accesorio a emplear
Interiores	Corriente del hogar	Adaptador de alimentación de CA AC-V25A/V25B/V25C (suministrado), AC-S10, AC-V55
Exteriores	Batería	Batería NP-55 (suministrada), NP-77H/77HD, NP-55H
En un automóvil	Batería de 12 V o 24 V	Grupo CC DCP-77

Nota sobre las fuentes de alimentación

La desconexión de la fuente de alimentación o la extracción de la batería durante la grabación o la reproducción podría dañar la cinta. Si se diera el caso, reponga inmediatamente el suministro de alimentación.

Using the Mains

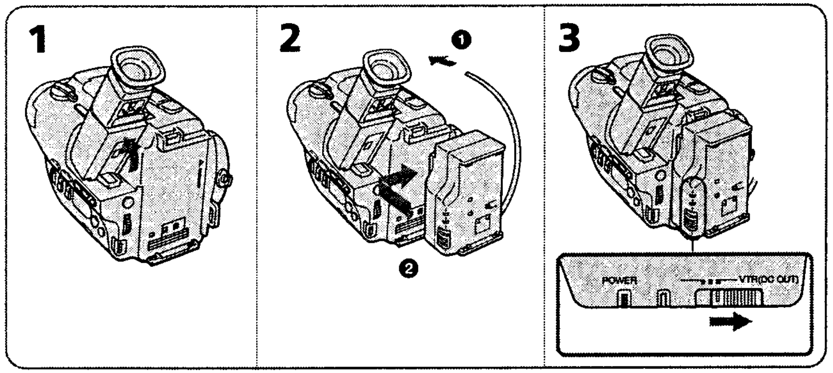
To use the supplied AC power adaptor:

(1) Lift up the viewfinder.
(2) Connect the mains lead to mains. Connect the bottom of the AC power adaptor to the battery mounting surface of the camcorder.
(3) Set the selector to VTR (DC OUT).

Empleo de la corriente del hogar

Para emplear el adaptador de alimentación de CA suministrado:

(1) Levante el visor.
(2) Conecte el cable de alimentación a una toma de corriente. Conecte la parte inferior del adaptador de alimentación de CA a la superficie donde se monta la batería en la videocámara.
(3) Ponga el selector en VTR (DC OUT).



WARNING

Mains lead must only be changed at qualified service shop.

PRECAUTION

The set is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the set itself has beep turned off.

Notes on the POWER lamp

- The POWER lamp will remain lit for a while even if the unit is unplugged after use. This is normal.
- If the POWER lamp does not light, set the selector to the centre position and disconnect the mains lead. After about one minute, reconnect the mains lead and set the selector to VTR (DC OUT) again.

To remove the adaptor

The adaptor is removed in the same way as the battery pack (p. 10).

See the next page for further information.

AVISO

El cable de alimentación deberá ser cambiado solamente en un taller de servicio cualificado.

PRECAUCIÓN

El grupo no estará desconectado de la fuente de alimentación de CA (red) siempre y cuando esté conectado a la toma de la pared, a pesar de que lo haya apagado.

Notas sobre la lámpara POWER

- La lámpara POWER permanecerá encendida durante un rato aunque se desenchufe la unidad después de emplearla. Esto es normal.
- Si la lámpara POWER no se enciende, ponga el selector en la posición central y desconecte el cable de alimentación. Después de aproximadamente un minuto, vuelva a conectar el cable de la alimentación y ponga otra vez el selector en VTR (DC OUT).

Para retirar el adaptador

El adaptador se retira de igual forma que la batería (página 10).

Vea la página siguiente para más información.

Using Alternative Power Sources

Using a Car Battery

Use the DCP-77 DC pack (not supplied). Connect the cord of the DC pack to the cigarette lighter socket of the car (12 V or 24 V). Connect the DC pack to the battery mounting surface of the camcorder.

To remove the DC pack
The DC pack is removed in the same way as the battery pack (p. 10).

Options for Charging the Battery Pack

- AC -S10 AC power adaptor:
  You can charge a battery pack whether it is used up or not with this adaptor because it has a discharging function.
- BC-S10 portable battery charger (ideal for travel):
  You can charge a battery pack on 100 – 240 V AC current.

This mark indicates that this product is a genuine product related to our 8 mm video equipment.
We recommend that you purchase related 8 mm video products provided with the same mark or products provided with our logotype mark.

Empleo de fuentes de alimentación alternativas

Empleo de la batería del automóvil

Utilice el grupo DCP-77 (no suministrado). Conecte el cable del grupo CC al receptáculo del encendedor de cigarrillos del automóvil (12 V o 24 V). Conecte el grupo CC a la superficie donde se monta la batería en la videocámara.

Para retirar el grupo CC
El grupo CC se retira de igual forma que la batería (página 10).

Opciones para cargar la batería

- Adaptador de alimentación de CA AC-S10:
  Con este adaptador de alimentación podrá cargar la batería tanto si está descargada como si no, porque dispone de una función de descarga.
- Cargador de bateria portátil BC-S10 (ideal para viajar):
  La bateria podrá cargarse con CA 100 – 240 V.

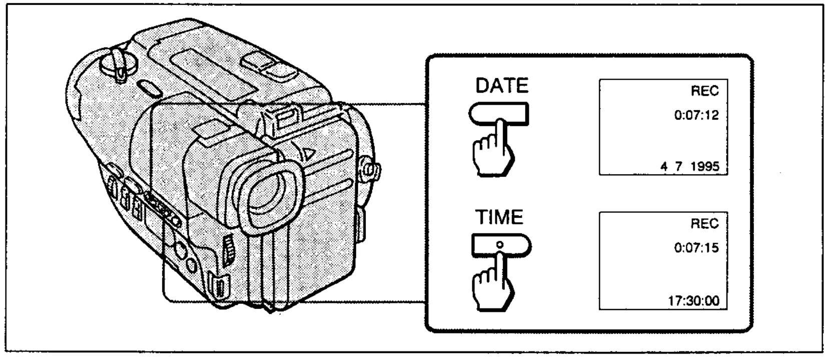
Esta marca indica que este producto es genuino y está relacionado con nuestro equipo de vídeo de 8 mm.
A la hora de adquirir nuestro equipo de vídeo de 8 mm, recomendamos elegir los productos de vídeo relacionados de 8 mm que dispongan de esta marca u otros con nuestro logotipo.

Recording with the Date or Time

Before you start recording, press DATE or TIME. You can record the date or time displayed in the viewfinder with the picture. You cannot record the date and time at the same time. Except for the date or time indicator, no indicator in the viewfinder is recorded.
The clock is already set at the factory; to Sydney time for Australia, to Tokyo time for the models sold in Japan and to Hong Kong time for the other countries. You can reset the clock in the menu system (p. 46).

Grabación con la fecha o la hora

Antes de comenzar a grabar, presione DATE o TIME. Podrá grabar la fecha o la hora mostrada en el visor junto con la imagen. No podrá grabar la fecha y la hora al mismo tiempo. Exceptuando el indicador de la fecha o la hora, ningún otro indicador del visor se grabará.
El reloj ya ha sido ajustado en fábrica; a la hora de Sidney para Australia, a la de Tokio para los modelos vendidos en Japón y a la de Hong Kong para los demás países. Podrá reajustar el reloj en el sistema de menú (página 46).



To Stop Recording with the Date or Time

Press DATE or TIME again. The date or time indicator disappears. The recording continues.

Para parar la grabación con la fecha o la hora

Presione otra vez DATE o TIME. El indicador de la fecha o la hora desaparecerá. La grabación continuará.

Shooting with Backlighting

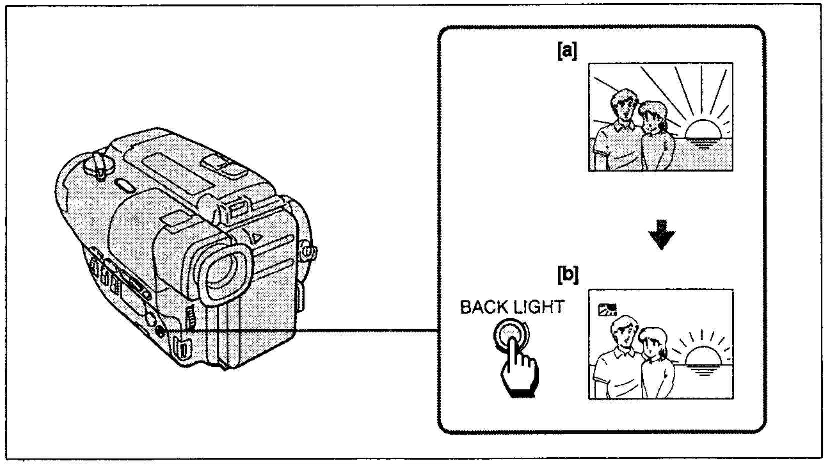
When you shoot a subject with the light source behind the subject or a subject with a light background, use the BACK LIGHT function.

Press BACK LIGHT. The ▣ indicator appears in the viewfinder.

Filmación con iluminación de fondo

Cuando filme un motivo con la fuente de luz detrás de él o un motivo con un fondo iluminado, utilice la función BACK LIGHT.

Presione BACK LIGHT. El indicador ▣ aparecerá en el visor.



[a] Subject is too dark because of backlight.
[b] Subject becomes bright with backlight compensation.

After Shooting

Be sure to release this adjustment condition by pressing BACK LIGHT again. The ▣ indicator in the viewfinder disappears. Otherwise, the picture will be too bright under normal lighting condition.

This function is also effective under the following conditions:

- On snow, e.g. at a ski resort
- At the beach under strong sunshine
- A subject with a light source nearby or a mirror reflecting light
- A white subject against a white background. Especially when you shoot a person wearing shiny clothes made of silk or synthetic fiber, his or her face tends to become dark if you do not use this function.

[a] El motivo está demasiado oscuro debido a la iluminación de fondo.
[b] El motivo adquiere brillo con la compensación de iluminación de fondo.

Después de la filmación

No se olvide de cancelar esta condición de ajuste presionando otra vez BACK LIGHT. El indicador ▣ en el visor desaparecerá. De lo contrario, la imagen tendrá un brillo excesivo bajo condiciones de iluminación normal.

Esta función también será eficaz bajo las condiciones siguientes:

- En la nieve, por ejemplo, en una estación invernal
- En la playa bajo un sol intenso
- Cuando el motivo tenga una fuente de luz próxima o un espejo que refleje luz
- Cuando un motivo blanco tenga un fondo blanco. Especialmente cuando filme a una persona con ropas brillantes de seda o fibra sintética, su rostro tenderá a oscurecerse si no emplea esta función.

Using the PROGRAM AE Function

You can select from four PROGRAM AE (Auto Exposure) modes to suit your shooting situation. When you use PROGRAM AE, you can get a Portrait effect (the subject is in focus and the background is out of focus), capture high-speed action, or record night views.

Selecting the Best Mode

Select one of four modes, referring to the following.

Portrait mode
- A still subject such as a person or a flower
- Zooming in on a subject in the telephoto mode
- A subject behind an obstacle such as a net

Sports mode
- Outdoor sports scenes such as football, tennis, golf or skiing
- A landscape from a moving car

High-speed shutter mode
- A golf swing or a tennis match in fine weather with the ball captured clearly
- Playing back certain scenes with high-speed movements in a clear, sharp picture

Twilight mode
- Recording night views, neon signs or fireworks

See the next page for further information.

Empleo de la función PROGRAM AE

Podrá seleccionar de entre cuatro modos PROGRAM AE (exposición automática) para adaptar su situación de filmación.
Cuando emplee PROGRAM AE, podrá obtener un efecto de retrato (el motivo estará enfocado y el fondo desenfocado), captar la acción a alta velocidad o grabar escenas nocturnas.

Selección del mejor modo

Seleccione uno de los cuatro modos consultando lo siguiente.

Modo de retrato
- Un motivo fijo como, por ejemplo, una persona o una flor.
- Acercamiento del motivo con el zoom en el modo de telefoto.
- Un motivo situado detrás de un obstáculo tal como una red.

Modo deportivo
- Escenas deportivas en exteriores como, por ejemplo, fútbol, tenis, golf o esquí.
- Un paisaje desde un vehículo en movimiento.

Modo de obturador de alta velocidad
- El movimiento al golpear una pelota de golf o un partido de tenis con buen tiempo y la pelota claramente captada.
- Reproducción de ciertas escenas con movimientos a gran velocidad en una imagen clara y nítida.

Modo de crepúsculo
- Grabación de vistas nocturnas, luces de neón o fuegos artificiales.

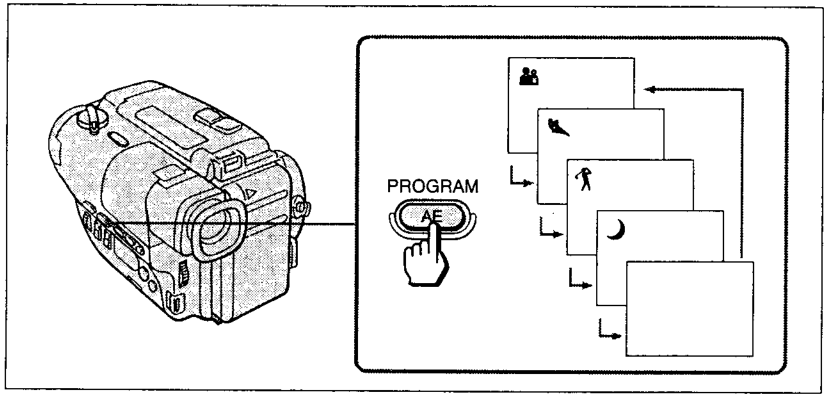
Vea la página siguiente para más información.

Using the PROGRAM AE Function

Press PROGRAM AE. The indicator of the selected PROGRAM AE mode appears in the viewfinder.

Empleo de la función PROGRAM AE

Presione PROGRAM AE. El indicador del modo PROGRAM AE seleccionado aparecerá en el visor.



Note on shutter speed

The shutter speed in each PROGRAM AE mode is as follows:
Portrait mode — between 1/50 to 1/2000
Sports mode — between 1/50 to 1/500
High-speed shutter mode — 1/4000
Twilight mode — 1/50
Normal mode — 1/50

Nota sobre la velocidad del obturador

La velocidad del obturador en cada modo PROGRAM AE es la siguiente:
Modo de retrato — entre 1/50 y 1/2000
Modo deportivo — entre 1/50 y 1/500
Modo de obturador de alta velocidad — 1/4000
Modo de crepúsculo — 1/50
Modo normal — 1/50

Fade-in and Fade-out

You can fade in or out to give your recording a professional appearance.
When fading in, the picture gradually fades in from black or mosaic while the sound increases.
When fading out, the picture gradually fades to black or mosaic while the sound decreases.

Aparición gradual y desvanecimiento

Podrá hacer que la imagen aparezca gradualmente o se desvanezca para dar a sus grabaciones un aspecto profesional.
Cuando realice la aparición gradual, la imagen aparecerá gradualmente desde un fondo negro o de mosaico a la vez que aumenta el sonido.
Cuando realice el desvanecimiento, la imagen desaparecerá gradualmente hacia un fondo negro o de mosaico a la vez que el sonido disminuye.

When Fading in [a]

(1) While the camcorder is in Standby mode, press FADER. The fade indicator starts flashing.
(2) Press START/STOP to start recording. The fade indicator stops flashing.

When Fading out [b]

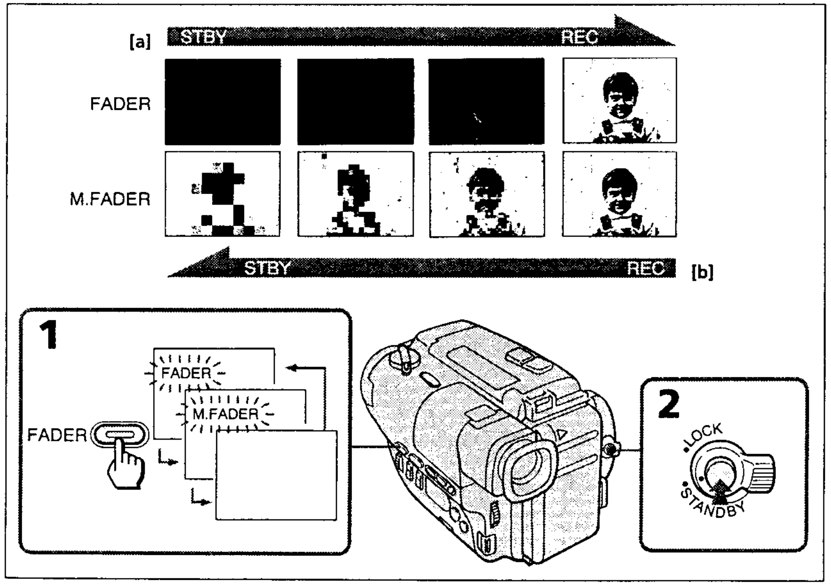
(1) During recording, press FADER. The fade indicator starts flashing.
(2) Press START/STOP to stop recording. The fade indicator stops flashing, and then recording stops.

Para la aparición gradual [a]

(1) Mientras la videocámara está en el modo de espera, presione FADER. El indicador de aparición gradual y desvanecimiento empezará a parpadear.
(2) Presione START/STOP para comenzar a grabar. El indicador de aparición gradual y desvanecimiento dejará de parpadear.

Para el desvanecimiento [b]

(1) Durante la grabación, presione FADER. El indicador de aparición gradual y desvanecimiento empezará a parpadear.
(2) Presione START/STOP para parar la grabación. El indicador de aparición gradual y desvanecimiento dejará de parpadear y luego la grabación cesará.



To Cancel the Fade-in/Fade-out Function

Before pressing START/STOP, press FADER until the fade indicator disappears.

When the date or time indicator is displayed

The date or time indicator does not fade in nor fade out.

Para cancelar la función de aparición gradual/desvanecimiento

Antes de presionar START/STOP, presione FADER hasta que desaparezca el indicador de aparición gradual y desvanecimiento.

Cuando el indicador de la fecha o la hora esté visualizado

El indicador de la fecha o la hora no aparecerá gradualmente ni se desvanecerá.

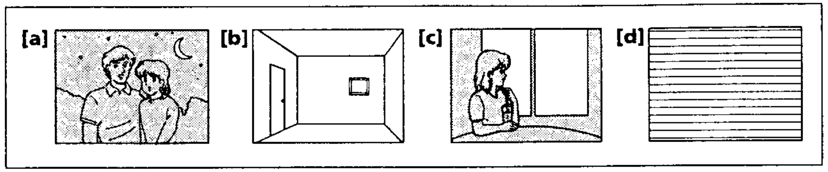
Focusing Manually Enfoque manual

When to Use Manual Focus

In the following cases you should obtain better results by adjusting the focus manually.

Cuándo emplear el enfoque manual

El los casos siguientes se obtendrán mejores resultados ajustando manualmente el enfoque.



- Insufficient light **[a]**
- Subjects with little contrast — walls, sky, etc. **[b]**
- Too much brightness behind the subject **[c]**
- Horizontal stripes **[d]**
- Subjects through frosted glass
- Subjects beyond nets, etc.
- Bright subject or subject reflecting light
- Shooting a stationary subject when using a tripod

- Luz insuficiente **[a]**
- Motivos con poco contraste — paredes, cielo, etc. **[b]**
- Demasiado brillo detrás del motivo **[c]**
- Rayas horizontales **[d]**
- Motivos situados detrás de un vidrio con escarcha
- Motivo situado detrás de redes, etc.
- Motivo brillante o motivo que refleja luz
- Cuando filme un motivo estacionario empleando un trípode

Focusing Manually

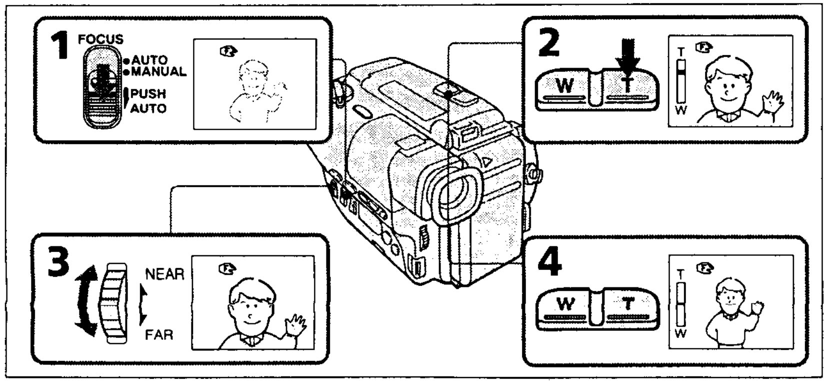
When focusing manually, first focus in telephoto before recording, and then reset the shot length.

(1) Set FOCUS to MANUAL. The ◎ indicator appears in the viewfinder.
(2) Keep pressing the "T" (telephoto) side of the power zoom button until the zooming stops.
(3) Turn the focus dial to achieve a sharp focus.
(4) Set the desired shot length using the power zoom button.

Enfoque manual

Cuando enfoque manualmente, enfoque primero en telefoto antes de grabar, y luego reajuste la distancia de filmación.

(1) Ponga FOCUS en MANUAL. El indicador ◎ aparecerá en el visor.
(2) Mantenga presionado el lado "T" (telefoto) del botón del zoom motorizado hasta que se pare el zoom.
(3) Gire el dial de enfoque para lograr un enfoque nítido.
(4) Ajuste la longitud de filmación deseada empleando el botón del zoom motorizado.



To Return to Autofocus Mode

Set FOCUS to AUTO. The ◎ indicator in the viewfinder disappears.

Shooting in relatively dark places

Shoot at wide-angle after focusing in the telephoto position.

Note on the focus dial

The focus dial does not have a stop position.

To Shoot with Autofocus Momentarily

When you want to switch to autofocus momentarily while recording in manual focus mode, push FOCUS down to PUSH AUTO. Autofocus functions while FOCUS is held down. When it is released, manual focus mode will be resumed.

Para volver al modo de enfoque automático

Ponga FOCUS en AUTO. El indicador ◎ del visor desaparecerá.

Filmación en lugares relativamente oscuros

Filme en granangular después de haber enfocado en telefoto.

Nota sobre el dial de enfoque

El dial de enfoque no tiene posición de parada.

Para filmar momentáneamente con enfoque automático

Cuando desee cambiar momentáneamente a enfoque automático mientras graba en el modo de enfoque manual, presione FOCUS hacia abajo para ponerlo en PUSH AUTO. El enfoque automático funcionará mientras FOCUS se mantenga presionado hacia abajo. Cuando lo deje libre, el modo de enfoque manual se reanudará.

Releasing the STEADY SHOT Function

– For the Models with the STEADY SHOT Switch (CCD-TR580E/TR670E only)

When you shoot, the ((✋)) indicator appears in the viewfinder. This indicates that the Steady shot function is working and the camcorder compensates for camera-shake.

You can release the Steady shot function when you do not need to use the Steady shot function. Do not use the Steady shot function when shooting a stationary object with a tripod.

Set STEADY SHOT to OFF.

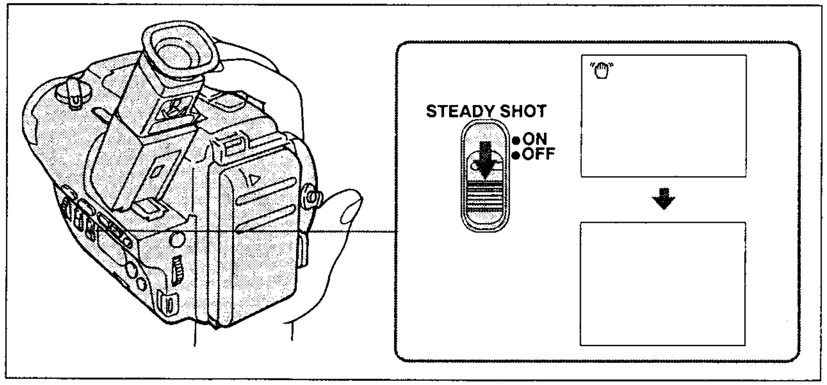
Cancelación de la función de filmación estable

– Para los modelos con conmutador STEADY SHOT (CCD-TR580E/TR670E solamente)

Cuando filme, el indicador ((✋)) aparecerá en el visor. Esto indicará que la función de filmación estable está funcionando y que la videocámara compensa sus propias vibraciones.

Podrá desactivar la función de filmación estable cuando no la necesite. No emplee esta función cuando filme un objeto estacionario con la videocámara sobre un trípode.

Ponga STEADY SHOT en OFF.



To Activate the Steady Shot Function Again

Set STEADY SHOT to ON.

Notes on the Steady shot function

- The Steady shot function will not correct excessive camera-shake.
- When you switch the STEADY SHOT function on or off, the exposure may fluctuate.

Para activar otra vez la función de filmación estable

Ponga STEADY SHOT en ON.

Notas sobre la función de filmación estable

- La función de filmación estable no corregirá las vibraciones excesivas de la videocámara.
- Cuando active y desactive la función de filmación estable, la exposición podría fluctuar.

Enjoying Picture Effect

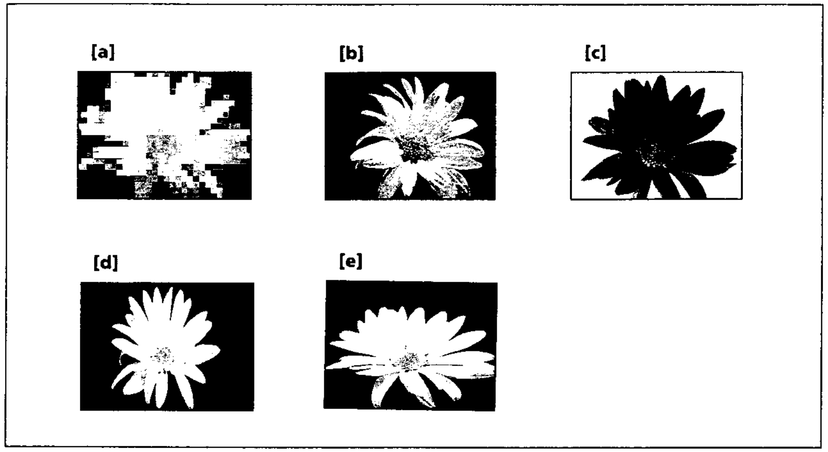
Selecting Picture Effect

You can make pictures like those of television with Picture Effect function.

Para disfrutar de los efectos de imagen

Selección del efecto de imagen

Con la función de efecto de imagen usted podrá crear imágenes como las de la televisión.



MOSAIC [a]
The picture is mosaic.

SOLARIZE [b]
The light intensity is more clear, and the picture looks like an illustration.

B&W
The picture is monochrome (black and white).

SEPIA
The picture is sepia.

NEG. ART [c]
The colour of the picture is reversed.

SLIM [d]
The picture expands vertically.

STRETCH [e]
The picture expands horizontally.

MOSAIC [a]
La imagen aparece en mosaico.

SOLARIZE [b]
La intensidad de la luz es más fuerte, y la imagen parece un dibujo.

B&W
La imagen es monocromo (blanco y negro).

SEPIA
La imagen es de color sepia.

NEG. ART [c]
El color de la imagen se muestra invertido.

SLIM [d]
La imagen se ensancha verticalmente.

STRETCH [e]
La imagen se ensancha horizontalmente.

See the next page for further information.

Vea la página siguiente para más información.

Enjoying Picture Effect

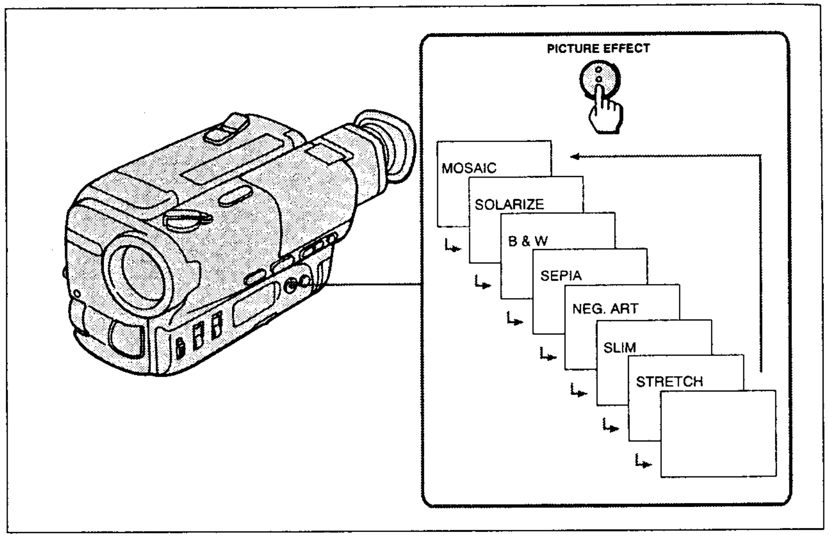
Para disfrutar de los efectos de imagen

Using Picture Effect Function

Press PICTURE EFFECT to select the desired Picture Effect mode.

Empleo de la función del efecto de imagen

Presione PICTURE EFFECT para seleccionar el efecto de imagen deseado.



Note on Picture Effect

When you turn the power off, the camcorder returns automatically to normal mode.

Nota sobre el efecto de imagen

Cuando se desconecta la alimentación, la videocámara retorna automáticamente al modo normal.

Shooting Scenery in Several Short Takes

Filmación de escenas en varias tomas cortas

Long, continuous shots of scenery tend to be dull, and have to be edited to make an interesting video. With the 5SEC. REC (5-second recording) mode, the camcorder records for only 5 seconds and then switches to Standby mode, so that you will automatically take a series of quick shots resulting in a lively video.

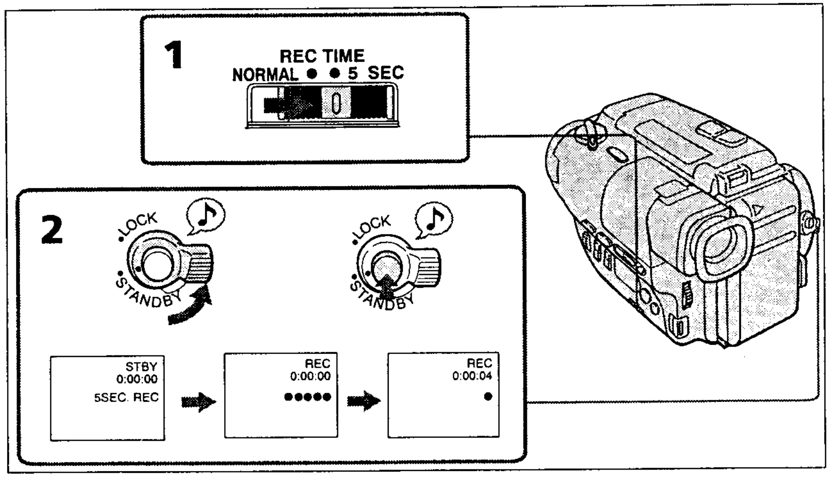
(1) Set REC TIME to 5 SEC.

(2) Turn STANDBY up and press START/STOP. Recording starts. "5SEC. REC" indicator appears in the viewfinder then the indicator changes to five dots.
The dots disappear at a rate of one per second. When five seconds elapse and all the dots disappear, the camcorder switches to Standby mode automatically.

La filmación larga y continua de escenas tiende a resultar aburrida, y tiene que ser editada para poder conseguir un vídeo interesante. Con el modo 5SEC. REC (5 segundos de grabación), la videocámara graba solamente durante 5 segundos y luego se pasa al modo de espera, con lo cual usted puede filmar automáticamente una serie de tomas rápidas resultando en un vídeo entretenido.

(1) Ponga REC TIME en 5SEC.

(2) Gire STANDBY hacia arriba y presione START/STOP. La grabación comenzará. En el visor aparecerá el indicador "5SEC. REC" que será sustituido luego por 5 puntos.
Los puntos irán desapareciendo uno a uno por cada segundo que pase. Cuando transcurran los cinco segundos y desaparezcan todos los puntos, la videocámara se pasará al modo de espera automáticamente.



To Extend the Recording Time

Press START/STOP again before all the dots disappear. Recording continues for 5 seconds from the moment you press START/STOP.

To Cancel 5-Second Recording

Set REC TIME to NORMAL. If you set the switch while recording, recording continues.

Note on 5-second recording

You cannot use FADER function during 5-second recording.

Para prolongar el tiempo de grabación

Presione START/STOP de nuevo antes de que desaparezcan todos los puntos. La grabación continuará otros cinco segundos desde el momento que presione START/STOP.

Para cancelar la grabación de 5 segundos

Ponga REC TIME en NORMAL. Si lo pone antes de finalizar la grabación, la grabación continuará.

Nota sobre la grabación de 5 segundos

La función FADER no se podrá utilizar durante la grabación de 5 segundos.

Changing the Mode Settings

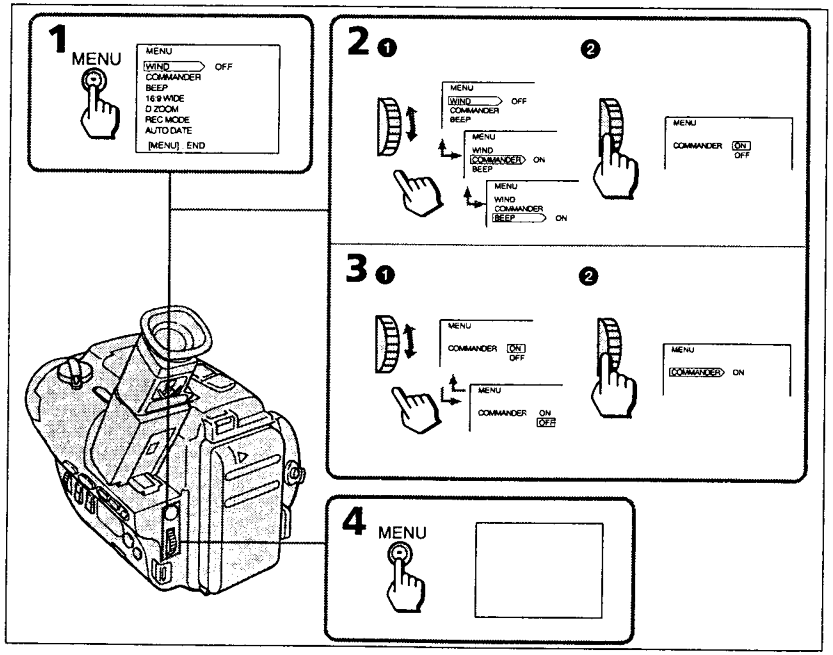
You can change the mode settings in the menu system to further enjoy the features and functions of the camcorder.

(1) Press MENU to display the menu in the viewfinder.
(2) Turn the menu dial to select the desired item, then press the dial.
(3) Turn the menu dial to set the desired mode, then press the dial. If you want to change the other modes, repeat steps 2 and 3.
(4) Press MENU to erase the menu display.

Cambio de los ajustes de modo

Podrá cambiar los ajustes de modo en el sistema de menú para disfrutar aún más de las características y de las funciones de la videocámara.

(1) Presione MENU para visualizar el menú en el visor.
(2) Gire el dial del menú para seleccionar el ítem deseado y luego presione el dial.
(3) Gire el dial del menú para fijar el modo deseado y luego presione el dial. Si desea cambiar a otros modos, repita los pasos 2 y 3.
(4) Presione MENU para cancelar la visualización de menú.



Selecting the Mode Setting of Each Item

Items for both CAMERA and PLAYER Modes

COMMANDER <ON/OFF>
- Select ON when using the supplied Remote Commander for the camcorder.
- Select OFF when not using the Remote Commander.

Selección del modo de ajuste de cada ítem

Ítemes para los modos CAMERA y PLAYER

COMMANDER <ON/OFF>
- Seleccione ON cuando emplee el telemando suministrado para la videocámara.
- Seleccione OFF cuando no emplee el telemando.

BEEP <ON/OFF>
- Select ON so that beeps sound when you start/stop recording, etc.
- Select OFF when you do not want to hear the beep sound.

CLOCK SET*
Select this item to reset the date or time.

Items for CAMERA Mode only

WIND <ON/OFF>
- Select ON to reduce wind noise when recording in strong wind.
- Normally select OFF.

16:9 WIDE* <CINEMA/FULL/OFF>
- Select CINEMA to record a cinemalike picture.
- Select FULL to record a picture to watch on the wide-screen TV.
- Normally select OFF.

D ZOOM* <ON/OFF>
- Select ON to activate digital zooming.
- Select OFF to not use the digital zoom. The camcorder goes back to 12x zoom.

REC MODE* <SP/LP>
- Select SP to record a tape in the SP (standard play) mode.
- Select LP to record in the LP (long play) mode.

AUTO DATE* <ON/OFF>
- Select ON to record the date for 10 seconds after recording has started.
- Select OFF to not record the date.

REC LAMP* <ON/OFF>
- Select OFF when you do not want the camera recording/battery lamp at the front of the unit to light up.
- Normally select ON.

Items for PLAYER Mode only

EDIT <ON/OFF>
- Select ON to minimize picture deterioration when editing.
- Normally select OFF.

HiFi SND <STEREO/1/2>
- Normally select STEREO.
- Select 1 or 2 to play back a dual sound track tape.

* These settings are retained even when the battery is removed, as long as the lithium battery is in place.

BEEP <ON/OFF>
- Seleccione ON para que suenen los pitidos cuando comience o pare la grabación, etc.
- Seleccione OFF cuando no quiera escuchar los pitidos.

CLOCK SET*
Seleccione este ítem para reponer la fecha o la hora.

Ítemes para el modo CAMERA solamente

WIND <ON/OFF>
- Seleccione ON para reducir el ruido del viento cuando grabe donde haga mucho viento.
- Seleccione OFF normalmente.

16:9 WIDE* <CINEMA/FULL/OFF>
- Seleccione CINEMA para grabar una imagen parecida a la del cine.
- Seleccione FULL para grabar una imagen que vaya a ser reproducida en un televisor de pantalla alargada.
- Seleccione OFF normalmente.

D ZOOM* <ON/OFF>
- Seleccione ON para activar el zoom digital.
- Seleccione OFF para no emplear el zoom digital. La videocámara volverá a zoom 12x.

REC MODE* <SP/LP>
- Seleccione SP para grabar una en el modo SP (reproducción estándar).
- Seleccione LP para prabar en el modo LP (reproducción de larga duración).

AUTO DATE* <ON/OFF>
- Seleccione ON para grabar la fecha durante 10 segundos después de empezar la grabación.
- Seleccione OFF par no grabar la fecha.

REC LAMP* <ON/OFF>
- Seleccione OFF cuando no quiera que la lámpara de grabación con videocámara/estado de la batería de la parte delantera de la unidad se encienda.
- Seleccione ON normalmente.

Ítemes para el modo PLAYER solamente

EDIT <ON/OFF>
- Seleccione ON para minimizar el deterioro de la imagen cuando haga la edición.
- Seleccione OFF normalmente.

HiFi SND <STEREO/1/2>
- Seleccione STEREO normalmte.
- Seleccione 1 ó 2 para reproducir una cinta de pista de sonido doble.

* Estos ítemes se mantienen incluso cuando se retira la batería siempre y cuando la pila de litio se encuentre instalada.

Using the Wide Mode Function

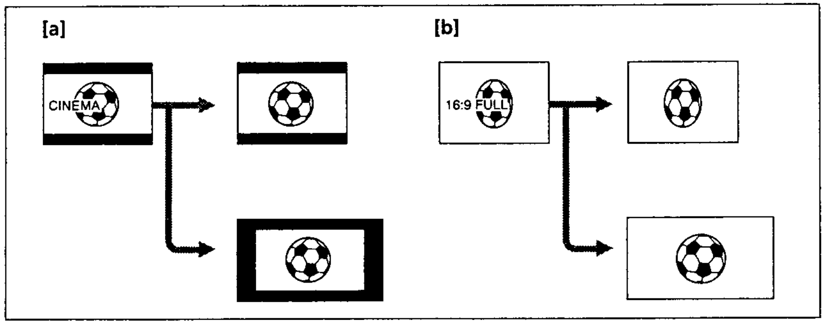
Empleo de la función de modo de pantalla alargada

Selecting the Desired Mode

You can record a cinemalike picture (CINEMA) or a 16:9 wide picture to watch on the 16:9 wide-screen TV (16:9 FULL).

Selección del modo deseado

Podrá grabar una imagen como la del cine (CINEMA) o una imagen alargada de 16:9 para verla en un televisor de pantalla alargada de 16:9 (16:9 FULL).



CINEMA [a]

Black bands appear at the top and the bottom of the screen, and the viewfinder and a normal TV screen look wide.
You can also watch the picture without black bands on a wide-screen TV.

16:9 FULL [b]

The picture in the viewfinder or on a normal TV is horizontally compressed. You can watch the picture of normal images on a wide-screen TV.

CINEMA [a]

Aparecerán franjas negras en las partes inferior y superior de la pantalla, y las pantallas del visor y de un televisor normal aparecerán como alargadas.
La imagen la podrá ver también sin las franjas negras en un televisor de pantalla alargada.

16:9 FULL [b]

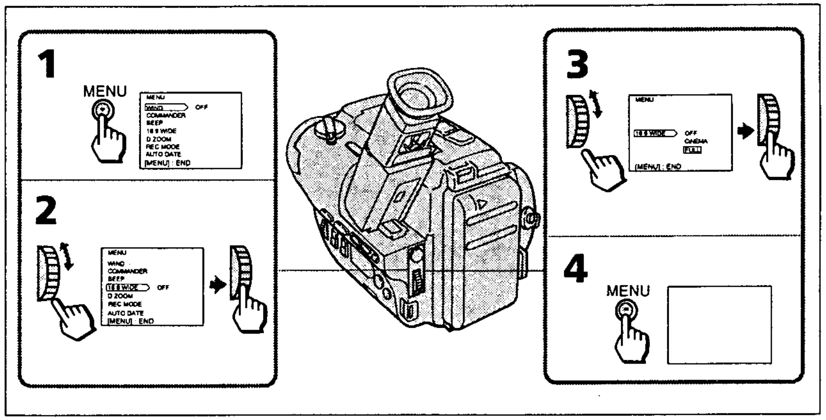
La imagen en el visor o en un televisor normal se comprime horizontalmente. Las imágenes de una grabación normal las podrá ver también en un televisor de pantalla alargada.

Using the Wide Mode Function

(1) Press MENU to display the menu in the viewfinder.
(2) Select 16:9 WIDE, then press the menu dial.
(3) Turn the menu dial to select the desired mode, then press the dial.
(4) Press MENU to erase the menu display.

Empleo de la función del modo de pantalla alargada

(1) Presione MENU para visualizar el menú en el visor.
(2) Seleccione 16:9 WIDE, luego presione el dial del menú.
(3) Gire el dial del menú para seleccionar el modo deseado, luego presione el dial.
(4) Presione MENU para que desaparezca la visualización del menú.



To Cancel Wide Mode

Set 16:9 WIDE to OFF in the menu system.

To Watch the Tape Recorded in 16:9 FULL Mode

Set the screen mode of the wide-screen TV to full (16:9) mode. For details, refer to the instruction manual of your TV.
Note that the picture looks compressed on a normal TV.

Notes on wide mode

- If 16:9 WIDE is set to FULL, the Steady shot function does not work and the ((◎)) indicator flashes.
- When you record in 16:9 FULL mode, the date or time indicator will be widened on the wide-screen TV.
- If you dub a tape, the tape is copied in the same mode as the original recording.

Para cancelar el modo de pantalla alargada

Ponga 16:9 WIDE en OFF en el sistema de menú .

Para ver la cinta grabada en el modo 16:9 FULL

Ponga el televisor de pantalla alargada en el modo de pantalla llena (16:9). Para detalles, consulte el manual de instrucciones del televisor. Tenga en cuenta que la imagen aparecerá comprimida en un televisor normal.

Notas sobre el modo de pantalla llena

- Si pone 16:9 WIDE en FULL, la función de filmación estable no funcionará y el indicador ((◎)) parpadeará.
- Cuando grabe en el modo 16:9 FULL, el indicador de la fecha o de la hora se ensanchará en el televisor de pantalla alargada.
- Si copia una cinta, ésta se grabará en el mismo modo que la grabación original.

Editing onto Another Tape

You can create your own video programme by editing with any other **8** 8 mm, **Hi8** Hi8, **VHS** VHS, **SVHS** S-VHS, **VHSC** VHSC, **SVHSC** S-VHSC or **B** Betamax VCR that has video/audio inputs.

Before Editing

Connect the camcorder to the VCR using the supplied A/V connecting cable (p. 20).
Set the input selector on the VCR to LINE, if available.

(1) While pressing the small green button on the POWER switch, turn it to PLAYER.
(2) Set EDIT to ON in the menu system (p. 39).

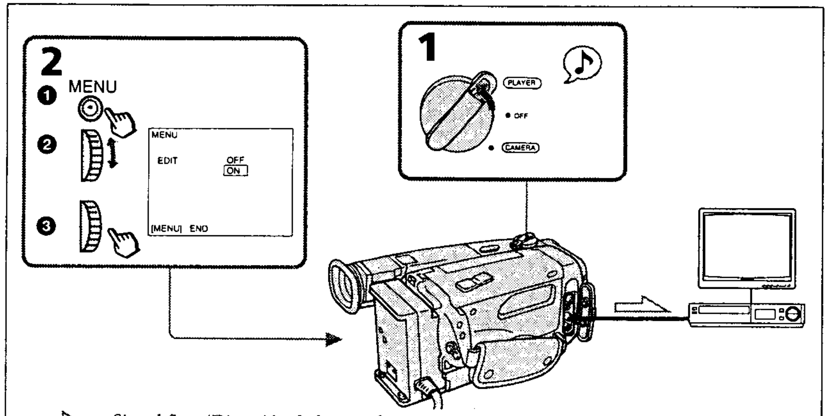
Edición en otra cinta

Podrá crear sus propios programas de vídeo editando con cualquier otra videograbadora **8** 8 mm, **Hi8** Hi8, **VHS** VHS, **SVHS** S-VHS, **VHSC** VHSC, **SVHSC** S-VHSC o **B** Betamax que tenga entradas de vídeo/audio.

Antes de editar

Conecte la videocámara a la videograbadora empleando el cable de conexión A/V suministrado (página 20).
Ponga el selector de entrada de la videograbadora en LINE, si tiene esa posición.

(1) Mientras presiona el pequeño botón verde del conmutador POWER, gírelo hasta PLAYER.
(2) Ponga EDIT en ON en el sistema de menú (página 39).



⇨ : Signal flow/Dirección de las señales

Starting Editing

(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert your recorded tape into the camcorder.
(2) Play back the recorded tape on the camcorder until you locate the point where you want to start editing, then set the camcorder in the playback pause mode.
(3) On the VCR, locate the recording start point and set the VCR in the recording pause mode.
(4) Press **II** on the camcorder and VCR simultaneously to start editing.

To Edit More Scenes

Repeat steps 2 to 4.

To Stop Editing

Press □ on both the camcorder and the VCR.

Use of the EDITSEARCH button
You can play back the tape in normal/reverse direction by holding down EDITSEARCH during playback pause mode. You can also play back still pictures successively at specific intervals by pressing EDITSEARCH intermittently.

Note on the DISPLAY function
If you have displayed the viewfinder screen indicators on the TV, erase the indicators by pressing DISPLAY on the Remote Commander so that they will not be superimposed on the edited tape.

Inicio de la edición

(1) Introduzca una cinta sin grabar (o una cinta que desee volver a grabar) en la videograbadora e introduzca su cinta grabada en la videocámara.
(2) Reproduzca la cinta grabada en su videocámara hasta que localice el punto donde desee iniciar la edición, luego ponga la videocámara en el modo de pausa de reproducción.
(3) En la videograbadora, localice el punto de inicio de la grabación y póngala en el modo de pausa de grabación.
(4) Presione simultáneamente **II** de la videocámara y de la videograbadora para iniciar la grabación.

Para editar más escenas

Repita los pasos 2 a 4.

Para parar la edición

Presione □ en la vieocámara y en la videograbadora.

Empleo del botón EDITSEARCH
Podrá reproducir la cinta en la dirección de avance/retroceso manteniendo presionado EDITSEARCH durante el modo de pausa de reproducción. También podrá reproducir imágenes fijas a intervalos especificados presionando EDITSEARCH intermitentemente.

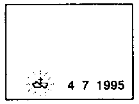
Nota sobre la función DISPLAY
Si se visualizan los indicadores del visor en la pantalla del televisor, haga desaparecer los indicadores presionando DISPLAY del telemando para que no se superpongan en la cinta editada.

Changing the Lithium Battery

Your camcorder is supplied with a lithium battery installed. The lithium battery for the camcorder lasts for about 1 year under normal operation. When the battery becomes weak or dead, the ⍢ indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery. Use of any other battery may present a risk of fire or explosion.**

Cambio de la pila de litio

Su videocámara es suministrada con una pila de litio instalada. La pila de litio para la videocámara dura 1 año aproximadamente operando la cámara de forma normal. Cuando la pila se debilite o se descargue, el indicador ⍢ parpadeará en el visor durante unos 5 segundos cuando ponga el conmutador POWER en CAMERA. En este caso, **cambie la pila por una pila de litio Sony CR2025 o Duracell DL-2025. El empleo de cualquier otra pila tal vez presente un riesgo de incendio o explosión.**

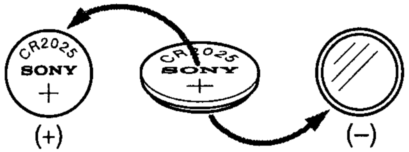


Note on Lithium Battery

The lithium battery has a positive (+) side and a negative (–) side as illustrated. Be sure to insert the lithium battery with the positive side facing out.

Nota sobre la pila de litio

La pila de litio tiene un lado positivo (+) y un lado negativo (–), como se muestra en la ilustración. Asegúrese de instalar la pila de litio con el lado positivo hacia afuera.



WARNING

The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

Caution

Keep the lithium battery out of the reach of children. Should the battery be swallowed, consult a doctor immediately.

AVISO

La pila de litio puede explotar si no se trata adecuadamente. No la cargue, desmonte ni la tire al fuego.

Precaución

Mantenga la pila de litio donde no la puedan alcanzar los niños. Si alguien la traga, consulte inmediatamente a un médico.

Changing the Lithium Battery

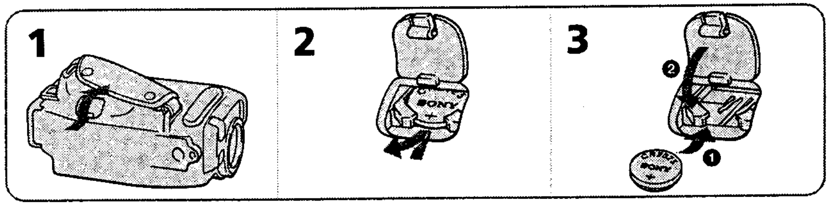
When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time and other items in the menu system retained by the lithium battery.

(1) Open the lid of lithium battery compartment under the grip strap of the camcorder.
(2) Push the battery down once and pull it out from the holder.
(3) Install the lithium battery with the positive (+) side facing out. Close the lid.

Cambio de la pila de litio

Cuando cambie la pila de litio, mantenga la batería u otra fuente de alimentación conectada. De lo contrario, tendrá que volver a poner la fecha, la hora y otros ítemes del sistema de menú mantenidos con la pila de litio.

(1) Abra la tapa del compartimiento de la pila de litio situada debajo de la correa de la empuñadura de la videocámara.
(2) Empuje la pila hacia abajo una vez y sáquela del portapila.
(3) Instale la pila de litio con el lado positivo (+) hacia afuera. Cierre la tapa.



Resetting the Date or Time

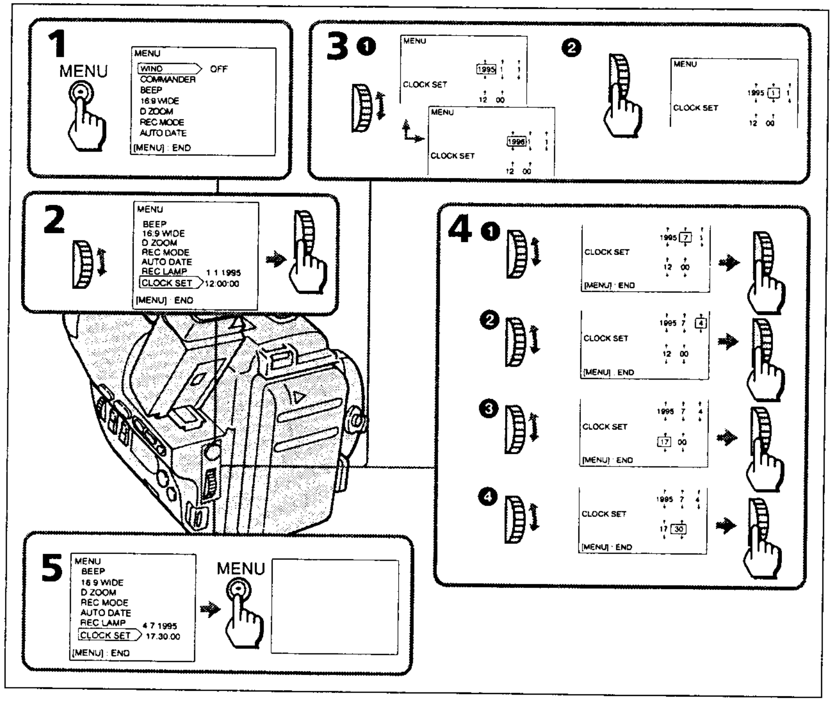
You can reset the date or time in the menu system.

(1) Press MENU to display the menu in the viewfinder.
(2) Select CLOCK SET, then press the menu dial.
(3) Turn the menu dial to adjust the year, and then press the dial.
(4) Set the month, day, hour and minutes by turning the menu dial and pressing it.
(5) Press MENU to erase the menu display.

Reposición de la fecha o la hora

Podrá reponer la fecha o la hora en el sistema de menú.

(1) Presione MENU para visualizar el menú en el visor.
(2) Seleccione CLOCK SET y luego presione el dial del menú.
(3) Gire el dial del menú para ajustar el año y luego presiónelo.
(4) Ajuste el mes, día, hora y minutos girando el dial del menú y presionándolo.
(5) Presione MENU para cancelar la visualización del menú.


1
MENU
MENU
WIND OFF
COMMANDER
BEEP
16:9 WIDE
D ZOOM
REC MODE
AUTO DATE
[MENU] : END
2
MENU
BEEP
16:9 WIDE
D ZOOM
REC MODE
AUTO DATE
REC LAMP 1 1 1995
CLOCK SET 12:00:00
[MENU] : END
3 ❶
MENU
1995 1 1
CLOCK SET
12 00
MENU
1996 1 1
CLOCK SET
12 00
❷
MENU
1995 1 1
CLOCK SET
12 00
4 ❶
CLOCK SET
1995 7 1
12 00
[MENU] : END
❷
CLOCK SET
1995 7 4
12 00
[MENU] : END
❸
CLOCK SET
1995 7 4
17 00
[MENU] : END
❹
CLOCK SET
1995 7 4
17 30
[MENU] : END
5
MENU
BEEP
16:9 WIDE
D ZOOM
REC MODE
AUTO DATE
REC LAMP 4 7 1995
CLOCK SET 17:30:00
[MENU] : END
MENU

To Correct the Date and Time Setting

Repeat steps 2 to 4.

Para corregir los ajustes de la fecha y la hora

Repita los pasos 2 a 4.

To Check the Preset Date and Time

Press DATE to display the date indicator in the viewfinder.
Press TIME to display the time indicator.
When you press the same button again, the indicator goes off.

Note on the setting of the year

When you set the year, each time you press DATE the digits change as follows:

1995 → 1996 → ---- → 2025
↑___________________________|

Para comprobar la fecha y la hora preajustadas

Presione DATE para visualizar el indicador de la fecha en el visor.
Presione TIME para visualizar el indicador de la hora.
Cuando presione otra vez el mismo botón, el indicador desaparecerá.

Nota sobre el ajuste del año

Cuando ajuste el año, cada vez que presione DATE los dígitos cambiarán de la forma siguiente:

1995 → 1996 → ---- → 2025
↑___________________________|

Playback Modes

The playback mode (SP or LP) is selected automatically according to the format in which the tape has been recorded. The quality of the recorded picture in LP mode, however, will not be as good as that in SP mode.

Note on AFM HiFi stereo

When you play back a tape, the sound will be in monaural if:

- You record the tape using this camcorder, then play it back on an AFM HiFi monaural video recorder/player.
- You record the tape on an AFM HiFi monaural video recorder, then play it back on this camcorder.

Recording mode

When you play back a tape, the SP/LP indicator in the viewfinder shows the recording mode SP/LP.

Foreign 8 mm video

You cannot play back software recorded on a different TV colour system. Because the TV colour systems differ from country to country, you may not be able to play back foreign pre-recorded software. Refer to page 56 to check the TV colour system of foreign countries.

Modos de reproducción

El modo de reproducción (SP o LP) se seleccionará automáticamente según el formato en el que se haya grabado la cinta. Sin embargo, la calidad de la imagen grabada en el modo LP no será tan buena como la del modo SP.

Notas sobre AFM HiFi estéreo

Cuando reproduzca una cinta, el sonido será monofónico si;

- Graba la cinta utilizando esta videocámara y luego la reproduce en un reproductor/videograbadora AFM HiFi monofónico.
- Graba la cinta en una videograbadora AFM HiFi monofónica y luego la reproduce en esta videocámara.

Modo de grabación

Cuando reproduzca una cinta, el indicador SP/LP del visor mostrará los modos de grabación SP/LP.

Vídeo de 8 mm del extranjero

No podrá reproducir programas grabados con un sistema de televisión en color diferente. Debido a que los sistemas de televisión en color cambian según los países, quizá no pueda reproducir programas grabados en el extranjero. Consulte la página 56 para comprobar cuáles son los sistemas de televisión en color de otros países del extranjero.

Tips for Using the Battery Pack

Consejos para emplear la batería

This section shows you how you can get the most out of your battery pack.

Preparing the Battery Pack

Always Carry Additional Batteries

Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

Battery Life is Shorter in a Cold Environment

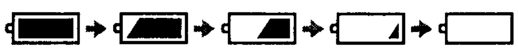
Battery efficiency is decreased and the battery will be used up more quickly if you are recording in a cold environment.

To Save Battery Power

Turn STANDBY on the camcorder down when not recording to save battery power **[a]** (p. 51).
A smooth transition between scenes can be made even if recording is stopped and started again. While you are positioning the subject, selecting an angle, or looking through the viewfinder lens, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.

When to Replace the Battery Pack

While you are using your camcorder, the remaining battery indicator in the viewfinder decreases gradually as battery power is used up.



When the remaining battery indicator reaches the lowest point, the ⊂⊃ indicator appears and starts flashing in the viewfinder **[b]** (p. 51).
When the ⊂⊃ indicator in the viewfinder changes from slow flashing to rapid flashing while you are recording, turn the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain a smooth transition between scenes after the battery pack is replaced.

Esta sección le muestra cómo obtener el máximo rendimiento de su batería.

Preparación de la batería

Lleve siempre baterías de repuesto

Prepare suficientes baterías para poder alimentar la videocámara 2 ó 3 veces más del tiempo de grabación planeado.

La duración de la batería se acorta con el frío

La eficiencia de la batería disminuirá, y se descargará con mayor rapidez, si graba donde haga frío.

Para ahorrar energía de la batería

Gire STANDBY de la videocámara hacia abajo cuando no grabe para ahorrar energía de la batería **[a]** (página 51).
Se podrá hacer una transición uniforme entre escenas aunque se pare la grabación y se vuelva a comenzar. Mientras se encuentre posicionando el motivo, seleccionando un ángulo o mirando a través del visor, el objetivo se moverá automáticamente y la batería se irá descargando. La batería se utilizará también cuando introduzca o retire una cinta.

Cuándo cambiar la batería

Mientras emplea la videocámara, el indicador del visor, que muestra la carga restante en la batería, disminuirá gradualmente a medida que la batería se vaya descargando.

Cuando el indicador de carga restante en la batería alcance el punto más bajo, el indicador ⊂⊃ aparecerá en el visor y empezará a parpadear **[b]** (página 51).
Cuando el indicador ⊂⊃ del visor cambie de parpadeo lento a rápido mientras graba, gire el conmutador POWER de la videocámara hasta OFF y cambie la batería. Deje la cinta en la videocámara para conseguir una transición uniforme entre escenas después de haber cambiado la batería.

Note on the remaining battery indicator

The remaining battery indicator of the camcorder may indicate a different remaining capacity from that of the battery pack with its own indicator (not supplied). The indicator on the battery pack is more accurate.

Notes on the Rechargeable Battery Pack

The Battery Pack Heats Up

During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern.

Battery Pack Care

- Remove the battery pack from the camcorder after using the battery pack, and keep it in a cool place. When the battery pack is attached to the camcorder, a small amount of current flows to the camcorder even if the POWER switch is set to OFF, which shortens battery life.
- The battery pack is always discharging even when it is not in use after charging. Therefore, you should charge the battery pack right before using the camcorder.

How to Use the Switch on the Battery Pack

This switch is provided so that you can mark the charged battery pack. Set the switch to the "no mark" position when charging is completed. Set the switch to the "red mark" position when the battery is used up (or in whichever direction you want to remind yourself) **[c]** (p. 51).

The Life of the Battery Pack

If the battery indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging Temperature

You should charge batteries at temperatures from 10°C to 30°C (from 50°F to 86°F). Lower temperatures require a longer charging time.

Nota sobre le indicador de carga restante en la batería

El indicador de carga restante en la batería de la videocámara podrá indicar una capacidad restante diferente de la indicada por el indicador de la propia batería (no suministrada). El indicador de la batería es más preciso.

Notas sobre la batería recargable

La batería se calienta

Durante la carga o la grabación, la batería se calienta. Esto se debe a la energía que se genera y al cambio químico que se produce en el interior de la batería. Esto no es motivo de preocupación.

Cuidados para la batería

- Retire la batería de la videocámara después de utilizarla y guárdela en un lugar fresco. Cuando la batería esté instalada en la videocámara, fluirá una pequeña cantidad de corriente a la videocámara aun cuando el conmutador POWER se encuentre en OFF, lo cual reducirá la carga de la batería.
- La batería se descargará continuamente incluso cuando no se esté utilizando después de haberla cargado. Por lo tanto, deberá cargarla justo antes de utilizar la videocámara.

Cómo utilizar el conmutador de la batería

Este conmutador está provisto para que Ud. pueda marcar la batería cargada. Póngalo en la posición "sin marca" cuando termine de cargarla. Póngalo en la posición "marca roja" cuando la batería esté descargada (o póngalo en la posición que mejor le recuerde el estado de la batería) **[c]** (página 51).

Duración de la vida útil de la batería

Si el indicador de la batería parpadea rápidamente justo después de encender la videocámara con una batería completamente cargada, la batería deberá ser sustituida por otra nueva completamente cargada.

Temperatura de carga

Deberá cargar las baterías a temperaturas comprendidas entre 10°C y 30°C. A temperaturas más bajas se requerirá más tiempo de carga.

Tips for Using the Battery Pack

Consejos para emplear la batería

Notes on Charging

A Brand-new Battery Pack

A brand-new battery pack is not charged. Before using the battery pack, charge it completely.

Before Recharging a Used Battery Pack

- Make sure to use up the battery before recharging.
- If recording is completed before the ▭ indicator appears in the viewfinder, you should remove the tape, turn the POWER switch to CAMERA, turn STANDBY up, and leave the camcorder until the battery indicator flashes rapidly.
- When you use the AC-S10 power adaptor or BC-S1C portable charger, you can use the discharging function.
- **Charging a usable battery pack causes a lowering of battery capacity. Battery capacity can be recovered if you fully discharge and charge the battery pack again.**

After Long Storage

Recharge the battery pack after a long period of storage. If the battery pack is charged fully but not used for a long time (about 1 year), it becomes discharged. Charge it again, but in this case the battery life will be shorter than normal. After several charging and discharging cycles, the battery life will recover its original capacity.

Notas sobre la carga

Una batería nueva

Una batería nueva no estará cargada. Antes de utilizarla, cárguela completamente.

Antes de cargar una batería usada

- Asegúrese de usar completamente la batería antes de cargarla.
- Si finaliza la grabación antes de que el indicador ▭ aparezca en el visor, deberá retirar la cinta, girar el conmutador POWER hasta CAMERA, girar STANDBY hacia arriba y dejar la videocámara hasta que el indicador de la batería parpadee rápidamente.
- Cuando utilice el adaptador de alimentación AC-S10 o el cargador portátil de baterías BC-S10, podrá usar la función de descarga.
- **La carga de una batería que no esté completamente descargada causará una disminución en su capacidad de carga. La capacidad original de la batería podrá recuperarse si la emplea hasta agotarla y luego la vuelve a cargar de nuevo completamente.**

Después de haber guardado la batería durante mucho tiempo

Cargue la batería después de haberla guardado durante mucho tiempo. Si la batería está completamente cargada pero no se utiliza durante mucho tiempo (1 año aproximadamente), ésta se descargará. Cárguela de nuevo, pero en este caso, la duración de la carga será inferior a la normal. Después de cargarla y descargarla varias veces, la batería recuperará su capacidad original.

Notes on the Terminals

If the terminals (metal parts on the back) are not clean, the battery duration will be shortened.

When the terminals are not clean or when the battery pack has not been used for a long time, repeatedly install and remove the battery pack. This improves the contact condition. Also, wipe the + and – terminals with a soft cloth or paper.

Notas sobre los terminales

Si los terminales (las partes metálicas del lado posterior) no están limpios, la duración de la batería se acortará.

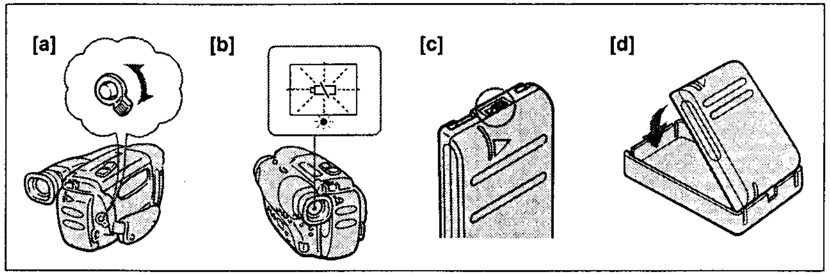
Cuando los terminales no estén limpios o cuando la batería no se haya utilizado durante mucho tiempo, instale y retire la batería repetidamente. Esto mejorará el contacto. Además, limpie los terminales + y – con un papel o paño suave.

Be Sure to Observe the Following

- **To prevent an accident caused by a short circuit, do not allow metal objects such as a necklace to touch the battery terminals. When carrying the battery pack, attach the terminal cover [d].**
- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor convert the battery pack.
- Do not expose the battery pack to any mechanical shock.

No se olvide de observar los puntos siguientes

- **Para evitar un accidente causado por un cortocircuito, no permita que objetos metálicos tales como collares toquen los terminales de la batería. Cuando lleve la batería encima, coloque la tapa de los terminales [d].**
- Mantenga la batería alejada del fuego.
- Mantenga seca la batería.
- No abra ni modifique la batería.
- No exponga la batería a ningún golpe mecánico.



Maintenance Information and Precautions

Información de mantenimiento y precauciones

Moisture Condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

Condensación de humedad

Si traslada la videocámara directamente de un lugar frío a otro cálido, es posible que se condense humedad en su interior, en la superficie de la cinta o en el objetivo. En estas condiciones, la cinta podrá adherirse al tambor de las cabezas y dañarse, o la videocámara podría no funcionar correctamente. Para evitar posibles daños en estas circunstancias, la videocámara dispone de sensores de humedad.
Sin embargo, tome las precauciones siguientes.

Maintenance Information and Precautions

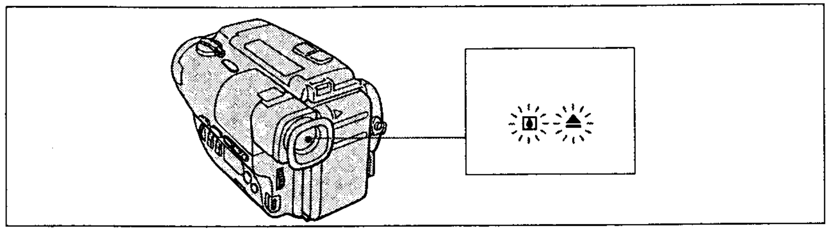
Información de mantenimiento y precauciones

Inside the Camcorder

When the ▣ and ⏏ indicators flash in the viewfinder, moisture has condensed inside the camcorder. If this happens, no other functions except for tape ejection will work.
Eject the tape, turn off the camcorder and leave it with the cassette holder open for at least one hour. The camcorder can be used again if the ▣ indicator does not appear when the power is turned on again.

En el interior de la videocámara

Cuando los indicadores ▣ y ⏏ parpadeen en el visor, se habrá condensado humedad en la videocámara. Si se diera el caso, no funcionará ninguna otra función excepto la expulsión de la cinta.
Expulse la cinta, desconecte la alimentación de la videocámara y déjela con el portacasete abierto durante una hora como mínimo. La videocámara podrá volver a utilizarse si el indicador ▣ no aparece cuando se vuelva a conectar la alimentación.



On the Surface of the Tape

If there is moisture on the surface of the tape, when you insert the cassette and press a tape transport button (▷ PLAY, etc.), the ⏏ indicator in the viewfinder flashes.
In this case, no other functions except for tape ejection will work.
Eject the tape, turn off the camcorder and leave it with the cassette holder open for at least one hour. The camcorder can be used again if the ⏏ indicator does not appear when you insert the cassette and press one of the tape transport buttons.

On the Lens

If moisture condenses on the lens, no indicator appears, but the picture becomes dim. Turn off the power and do not use the camcorder for about one hour.

How to Prevent Moisture Condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

(1) Be sure to tightly seal the plastic bag containing the camcorder.
(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

En la superficie de la cinta

Si hay humedad en la superficie de la cinta, cuando introduzca el videocasete y pulse un botón de transporte de la cinta (▷ PLAY, etc.), el indicador ⏏ del visor parpadeará.
En este caso, no funcionará ninguna otra función excepto la expulsión de la cinta.
Expulse la cinta, desconecte la alimentación de la videocámara y déjela con el portacasete abierto durante una hora como mínimo. La videocámara podrá volver a utilizarse si el indicador ⏏ no aparece cuando introduzca el casete y presione uno de los botones de transporte de la cinta.

En el objetivo

Si se condensa humedad en el objetivo, no aparecerá ningún indicador, pero la imagen perderá intensidad. Desconecte la alimentación y no utilice la videocámara durante una hora aproximadamente.

Cómo prevenir la condensación de humedad

Cuando pase la videocámara de un lugar frío a otro cálido, meta la videocámara en una bolsa de plástico y deje que se adapte a las condiciones de la sala durante un período de tiempo.

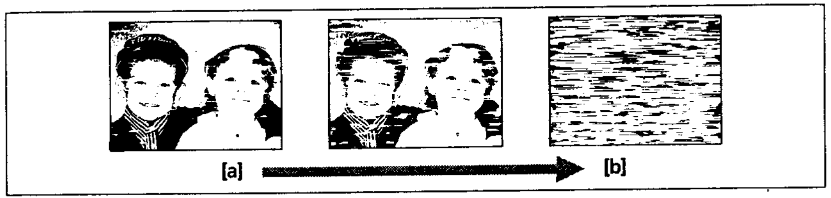
(1) Asegúrese de cerrar firmemente la bolsa de plástico con la videocámara dentro.
(2) Sáquela de la bolsa cuando la temperatura del aire en el interior de la bolsa haya alcanzado la temperatura alrededor de ella (después de una hora aproximadamente).

Video Head Cleaning

To ensure normal recording and clear pictures, clean the video heads often. When the ⊗ indicator and " ⊡ CLEANING CASSETTE" message appear one after another in the viewfinder or playback pictures are "noisy" or hardly visible, the video heads may be dirty.

Limpieza de las cabezas de vídeo

Para asegurar una grabación normal y unas imágenes claras, limpie las cabezas de vídeo a menudo. Cuando el indicador ⊗ y el mensaje " ⊡ CLEANING CASSETTE" aparezcan en el visor uno después de otro o cuando las imágenes reproducidas tengan "ruido" o apenas se puedan ver, las cabezas de vídeo quizá estén sucias.



[a] Slightly dirty
[b] Very dirty

If this happens, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied). After checking the picture, if it is still "noisy," repeat the cleaning. (Do not repeat cleaning more than 5 times.)

Caution

Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note

If the V8-25CLH cleaning cassette is not available in your area, consult your nearest Sony dealer.

[a] Cabezas un poco sucias
[b] Cabezas muy sucias

Si se da el caso, limpie las cabezas con el limpiador de cabezas Sony V8-25CLH (no suministrado). Después de comprobar la imagen, si aún sigue teniendo "ruido," repita la limpieza. (No repita la limpieza más de 5 veces.)

Precaución

No utilice un videocasete de limpieza tipo húmedo de venta en el comercio. Podría dañar las cabezas.

Nota

Si no puede adquirir en su zona el videocasete de limpieza V8-25CLH, consulte a su concesionario Sony más cercano.

Removing Dust from Inside the Viewfinder

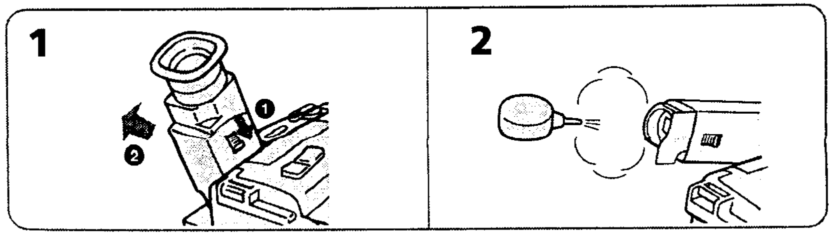
– For the Models with a Monochrome Viewfinder (CCD-TR480E/TR580E only)

(1) While holding down the switch on the viewfinder barrel, slide the eyecup to the left.
(2) Clean the surface with a commercially available blower.

Extracción del polvo del interior del visor

– Para los modelos con un visor en blanco y negro (CCD-TR480E/TR580E solamente)

(1) Mientras presiona el conmutador del cuerpo del visor, deslice el ocular hacia la izquierda.
(2) Limpie la superficie con un soplador de aire que podrá adquirir en el comercio.



Maintenance Information and Precautions

Precautions

Camcorder Operation

- Operate the camcorder on 6.0 V (battery pack) or 7.5 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this manual.
- Should any solid object or liquid get inside the casing, unplug the camcorder and have it checked by Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camcorder.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.

On Handling Tapes

Do not insert anything in the small holes on the rear of the cassette. These holes are used to sense the type, thickness of tape, if the tab is out or in, etc.

Camcorder Care

- When the camcorder is not to be used for a long time, disconnect the power source and remove the tape. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on it, remove them with a soft cloth
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.

Información de mantenimiento y precauciones

Precauciones

Operación de la videocámara

- Utilice la videocámara con 6,0 V (batería) o 7,5 V (adaptador de alimentación de CA).
- Para operarla con CC o CA, utilice los accesorios recomendados en este manual.
- Si cayera algún objeto sólido o líquido en el interior de la videocámara, desenchúfela y pida a su concesionario Sony que se la revise antes de volver a utilizarla.
- Evite manejarla con rudeza o los golpes mecánicos. Tenga cuidado especial con el objetivo.
- Mantenga el conmutador POWER en OFF cuando no utilice la videocámara.
- No utilice la videocámara envuelta porque se calentará.
- Mantenga la videocámara alejada de los campos magnéticos fuertes o vibraciones mecánicas.

Manejo de las cintas

No introduzca nada en los pequeños agujeros de la parte posterior del videocasete. Estos agujeros son usados para detectar el tipo y grosor de la cinta, o si la lengüeta está hacia afuera o hacia dentro, etc.

Cuidados para la videocámara

- Cuando la videocámara no se vaya a utilizar durante mucho tiempo, desconecte la fuente de alimentación y retire la cinta. Periódicamente, conecte la alimentación, utilice las secciones de la camara y del reproductor y reproduzca una cinta durante unos 3 minutos.
- Limpie el objetivo con un cepillo suave para quitar el polvo. Si tiene huellas dactilares, quítelas con un paño suave
- Limpie el cuerpo de la videocámara con un paño suave y seco, o con un paño suave ligeramente humedecido en una solución de detergente suave. No utilice ningún tipo de disolvente que pueda estropear el acabado.

AC Power Adaptor

Charging

- **Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.**
- Charge the battery pack on a flat surface without vibration.
- The battery pack will get hot during charging. This is normal.

Others

- Unplug the unit from mains when not in use for a long time. To disconnect the mains lead, pull it out by the plug. Never pull the mains lead itself.
- Do not operate the unit with a damaged mains lead or if the unit has been dropped or damaged.
- Do not bend the mains lead forcibly, or put a heavy object on it. This will damage the mains lead and may cause a fire or an electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Adaptador de alimentación de CA

Carga

- **La carga de una batería que no esté completamente descargada causará una disminución en su capacidad de carga. Sin embargo, la capacidad original de la batería podrá recuperarse si la emplea hasta agotarla y luego la vuelve a cargar de nuevo completamente.**
- Cargue la batería sobre una superficie plana y sin vibraciones.
- La batería se calentará durante la carga. Esto es normal.

Otras precauciones

- Desenchufe la unidad de la toma de corriente de la pared cuando no la vaya a utilizar durante mucho tiempo. Para desenchufar el cable de alimentación, tire de la clavija. Nunca tire del propio cable.
- No utilice la unidad con el cable de alimentación dañado, o si se ha caído o dañado.
- No doble a la fuerza el cable de alimentación ni ponga un objeto pesado sobre él. Esto dañará el cable y podría causar un incendio o una sacudida eléctrica.
- Asegúrese de que nada metálico entre en contacto con las partes metálicas de la placa de conexión. Si así ocurriera, podría producirse un cortocircuito y dañarse la unidad.
- Mantenga siempre limpios los contactos metálicos.
- No desmonte la unidad.
- Evite los golpes mecánicos y no deje caer la unidad.
- Mientras utiliza la unidad, particularmente durante la carga, manténgala alejada de receptores de AM y equipos de vídeo porque perturbará la recepción de AM y el funcionamiento del equipo de vídeo.
- La unidad se calentará mientras se utilice. Esto es normal.
- No ponga la unidad en los lugares siguientes:
  - Muy calientes o fríos
  - Polvorientos o sucios
  - Muy húmedos
  - Con vibraciones

Si se presenta alguna dificultad, desenchufe la unidad y póngase en contacto con su concesionario Sony más cercano.

Using Your Camcorder Abroad

Each country has its own electric and TV colour systems. Before using your camcorder abroad, check the following points.

Power Sources

You can use your camcorder in any country with the supplied AC power adaptor within 110 V to 240 V AC, 50/60 Hz.

Difference in Colour Systems

This camcorder is a PAL system based camcorder. If you want to view the playback picture on a TV, it must be a PAL system based TV or a SECAM system based TV with a PAL/SECAM transcoder.
Check the following list.

PAL system countries
Australia, Austria, Belgium, China, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system country
Brazil

PAL-N system countries
Argentina, Paraguay, Uruguay

NTSC system countries
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

SECAM system countries
Bulgaria, Czech Republic, France, Guiana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Slovak Republic, Ukraine, etc.

Empleo de su videocámara en el extranjero

Cada país tiene sus propios sistemas eléctrico y de televisión en color. Antes de utilizar su videocámara en el extranjero, compruebe los puntos siguientes.

Fuentes de alimentación

Podrá utilizar su videocámara en cualquier país con el adaptador de alimentación de CA suministrado, dentro del margen de 110 a 240 V, 50/60 Hz.

Diferencias en los sistemas de TV en color

Esta videocámara está basada en el sistema PAL. Si desea ver la imagen reproducida en un televisor, éste deberá ser un televisor basado en el sistema PAL o un televisor basado en el sistema SECAM con transcodificador PAL/SECAM. Compruebe la lista siguiente.

Países con sistema PAL
Alemania, Australia, Austria, Bélgica, China, Dinamarca, España, Finlandia, Gran Bretaña, Holanda, Hong Kong, Italia, Kuwait, Malaysia, Noruega, Nueva Zelanda, Portugal, Singapur, Suecia, Suiza, Tailandia, etc.

País con el sistema PAL-M
Brasil

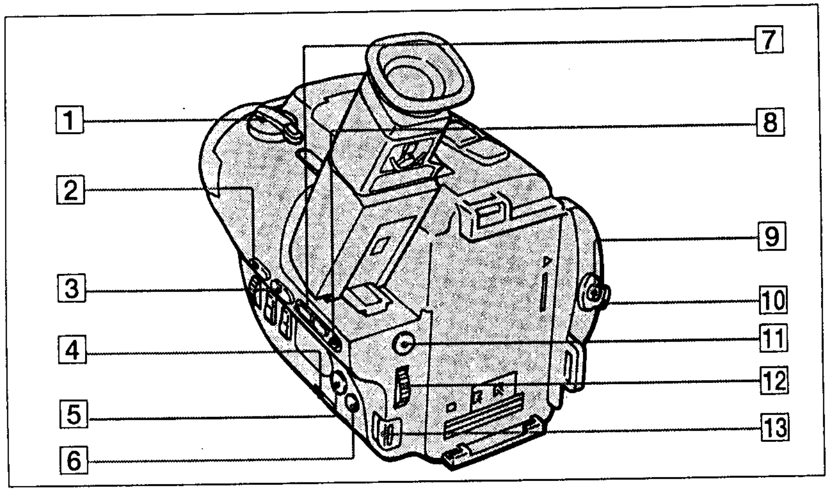
Países con el sistema PAL-N
Argentina, Paraguay, Uruguay

Países con el sistema NTSC
Bolivia, Canadá, Centroamérica, Chile, Colombia, Corea, Ecuador, EE.UU., Filipinas, Islas Bahamas, Jamaica, Japón, México, Perú, Surinam, Taiwan, Venezuela, etc.

Países con el sistema SECAM
Bulgaria, República de Checoslovaquia, Francia, Guyana, Hungría, Irán, Irak, Mónaco, Polonia, Rusia, República de Eslovaquia, Ucrania, etc.

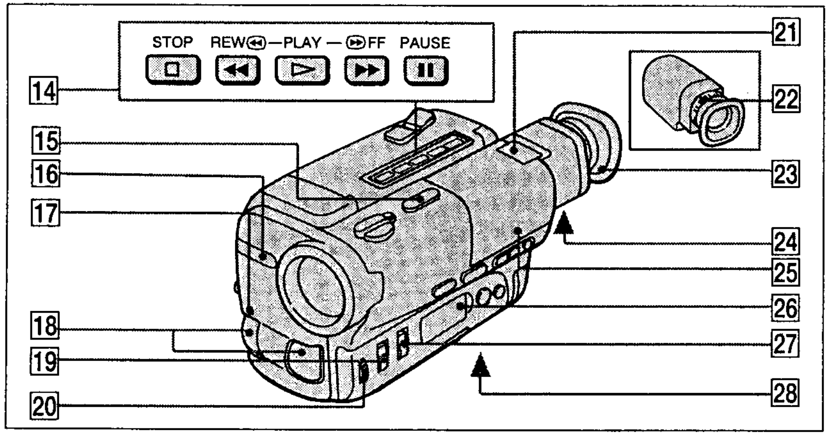
Identifying the Parts

Identificación de las partes



1. **POWER switch** (p. 12, 22)
2. **FADER button** (p. 31)
3. **PROGRAM AE button** (p. 30)
4. **REC TIME switch** (p. 27)
5. **PICTURE EFFECT button** (p. 36)
6. **BACK LIGHT button** (p. 28)
7. **DATE and TIME buttons** (p. 27)
8. **COUNTER RESET button** (p. 14)
9. **START/STOP button** (p. 13, 14)
10. **STANDBY switch** (p. 12)
11. **MENU button** (p. 38)
12. **Menu dial** (p. 38)
13. **BATT (battery release) knob** (p. 10)

1. **Conmutador de alimentación (POWER)** (páginas 12, 22)
2. **Botón de fundidos (FADER)** (página 31)
3. **Botón de exposición automática programada (PROGRAM AE)** (página 30)
4. **Conmutador de tiempo de grabación (REC TIME)** (página 27)
5. **Botón de efecto de imagen (PICTURE EFFECT)** (página 36)
6. **Botón de compensación de iluminación posterior (BACK LIGHT)** (página 28)
7. **Botones de la fecha (DATE) y la hora (TIME)** (página 27)
8. **Botón de reposición del contador (COUNTER RESET)** (página 14)
9. **Botón de inicio/parada de grabación (START/STOP)** (páginas 13, 14)
10. **Conmutador de puesta en espera (STANDBY)** (página 12)
11. **Botón de operación del menú (MENU)** (página 38)
12. **Dial del menú** (página 38)
13. **Perilla de expulsión de la batería (BATT)** (página 10)



14 **Tape transport buttons** (p. 22)
- □ STOP (stop)
- ◀◀ REW (rewind)
- ▷ PLAY (playback)
- ▶▶ FF (fastforward)
- ❚❚ PAUSE (pause)

15 **EDITSEARCH button** (p. 18)

16 **Remote sensor** (p. 72)
Aim the Remote Commander here for remote control.

17 **Camera recording/battery lamp**

18 **Built-in microphone**

19 **FOCUS switch** (p. 32)

20 **Focus dial** (p. 32)

21 **Lighting aperture** (**CCD-TR670E** only)

22 **Viewfinder lens adjustment ring** (**CCD-TR480E/TR580E** only) (p. 13)

23 **Eyecup**

24 **Viewfinder lens adjustment lever** (**CCD-TR670E** only) (p. 13)

25 **Viewfinder** (p. 13)

26 **Display window** (p. 73, 74)

27 **STEADY SHOT switch** (**CCD-TR580E/TR670E** only) (p. 34)

28 **Tripod receptacle** (p. 17)

14 **Botones del transporte de la cinta** (página 22)
- □ STOP (parada)
- ◀◀ REW (rebobinado)
- ▷ PLAY (reproducción)
- ▶▶ FF (avance rápido)
- ❚❚ PAUSE (pausa)

15 **Botón de búsqueda para edición y revisión de grabación (EDITSEARCH)** (página 18)

16 **Sensor de señales del telemando** (página 72)
Dirija el telemando hacia este sensor para realizar el control a distancia.

17 **Lámpara de grabación con la videocámara/batería**

18 **Micrófono incorporado**

19 **Conmutador de enfoque (FOCUS)** (página 32)

20 **Dial de enfoque** (página 32)

21 **Abertura de iluminación** (**CCD-TR670E** salamente)

22 **Anillo de ajuste de la lente del visor** (**CCD-TR480E/TR580E** solamente) (página 13)

23 **Ocular**

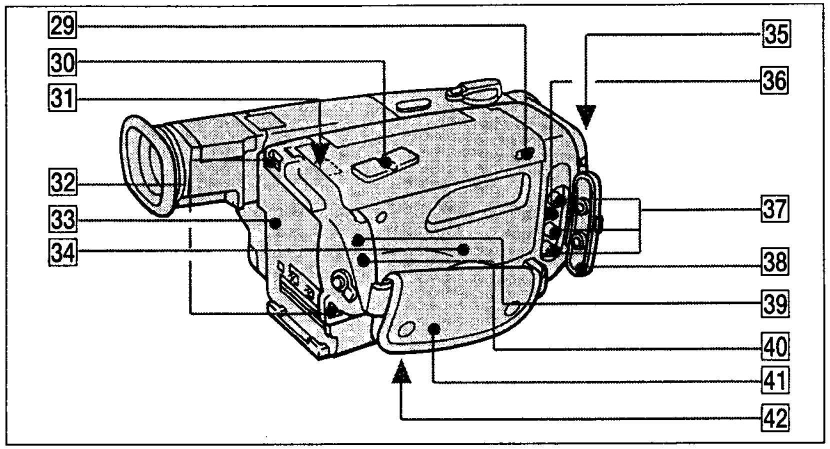
24 **Palanqilla de ajuste de la lente del visor** (**CCD-TR670E** solamente) (página 13)

25 **Visor** (página 13)

26 **Visualizador** (páginas 73, 74)

27 **Conmutador de filmación estable (STEADY SHOT)** (**CCD-TR580E/TR670E** solamente) (página 34)

28 **Receptáculo para el trípode** (página 17)



29 **Cassette compartment lid release knob** (p. 11)

30 **Power zoom button** (p. 15)

31 **EJECT button (under the cover)** (p. 11)

32 **Hooks for shoulder strap** (p. 70)

33 **Battery mounting surface** (p. 10)

34 **Cassette compartment** (p. 11)

35 **MIC jack (PLUG IN POWER)**
Connect an external microphone (not supplied). This jack also accepts a "plug-in-power" microphone.

36 **RFU DC OUT (RFU adaptor DC output) jack** (p. 21)

37 **Video/Audio output jacks** (p. 20, 21)

38 **Jack cover**

39 **LANC Ⓛ control jack**
Ⓛ stands for Local Application Control Bus System. The Ⓛ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the jack indicated as CONTROL L or REMOTE.

40 **∩ (headphones) jack**

41 **Grip strap** (p. 17)

42 **Lithium battery compartment** (p. 44)

29 **Perilla de liberación de la tapa del compartimiento del videocasete** (página 11)

30 **Botón de zoom motorizado** (página 15)

31 **Botón de expulsión (EJECT) (debajo de la tapa)** (página 11)

32 **Ojales para la bandolera** (página 70)

33 **Superficie de montaje de la batería** (página 10)

34 **Compartimiento del videocasete** (página 11)

35 **Toma de micrófono (MIC) (encendido automático al conectar) (PLUG IN POWER)**
Conecte un micrófono externo (no suministrado). A esta toma también se puede conectar un micrófono de "encendido automático al conectar."

36 **Toma de salida de CC del adaptador de RFU (RFU DC OUT)** (página 21)

37 **Tomas de salida de vídeo/audio** (páginas 20, 21)

38 **Tapa de tomas**

39 **Toma de control (LANC Ⓛ)**
Ⓛ significa Sistema de Bus de Control de Aplicación Local. La toma de control Ⓛ se emplea para controlar el movimiento de la cinta del equipo de vídeo y de los periféricos conectados a él. Esta toma tiene la misma función que la toma indicada como CONTROL L o REMOTE.

40 **∩ Toma para auriculares**

41 **Correa de la empuñadura** (página 17)

42 **Compartimiento de la pila de litio** (página 44)

Identifying the Parts

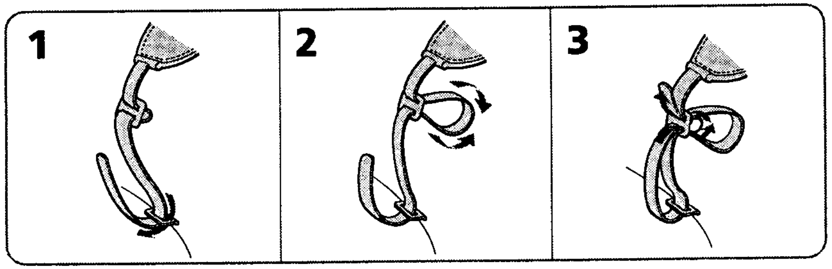
Identificación de las partes

Attaching the Shoulder Strap

Attach the supplied shoulder strap to the hooks for the shoulder strap (p. 69).

Colocación de la bandolera

Enganche la bandolera suministrada en los ojales para la misma (página 69).

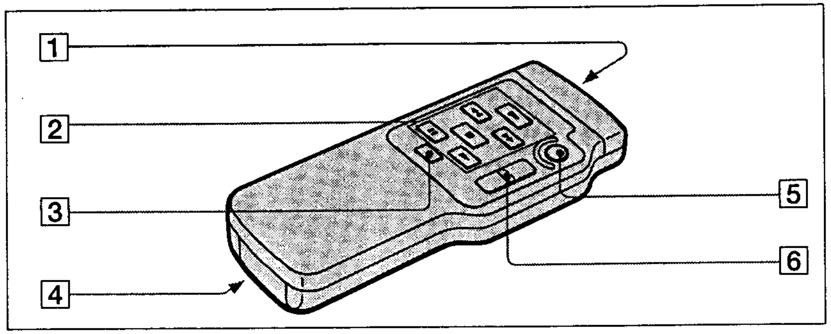


Remote Commander

The buttons that have the same name on the Remote Commander as on the camcorder function identically.

Telemando

Los botones que tienen el mismo nombre en el telemando y en la videocámara tienen también las mismas funciones.



1. **Transmitter**
   Point toward the remote sensor to control the camcorder after turning on the POWER switch on the camcorder.
2. **Tape transport buttons**
3. **DISPLAY button**
4. **R6 (Size AA) battery holder**
5. **START/STOP button**
6. **Power zoom button**
   The zooming speed is unchangeable in the Remote Commander.

1. **Transmisor**
   Diríjalo hacia el sensor de señales del telemando para controlar la videocámara después de conectar la alimentación con el conmutador POWER de la videocámara.
2. **Botones de movimiento de la cinta**
3. **Botón de visualización (DISPLAY)**
4. **Compartimiento de las pilas R6 (tamaño AA)**
5. **Botón de inicio/parada (START/STOP)**
6. **Botón del zoom motorizado**
   La velocidad del zoom no cambiará empleando el telemando.

To Prepare the Remote Commander

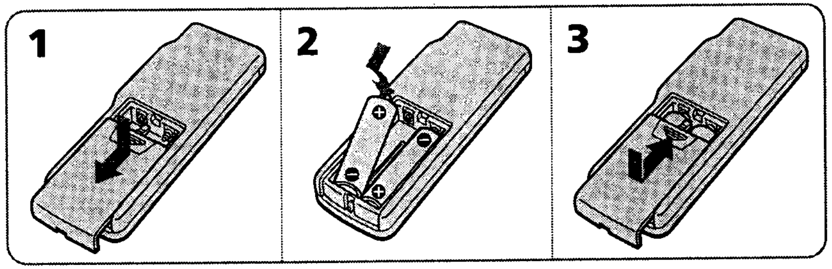
To use the Remote Commander, you must insert two R6 (size AA) batteries. Use the supplied R6 (size AA) batteries.

(1) Remove the battery cover from the Remote Commander.
(2) Insert both of the R6 (size AA) batteries with correct polarity.
(3) Put the battery cover back onto the Remote Commander.

Para preparar el telemando

Para emplear el telemando, tendrá que insertar dos pilas R6 (tamaño AA). Emplee las pilas R6 (tamaño AA) suministradas.

(1) Extraiga la tapa de las pilas del telemando.
(2) Inserte ambas pilas R6 (tamaño AA) poniendo correctamente sus polaridades.
(3) Vuelva a poner la tapa de las pilas en el telemando.



Note on battery life

The batteries for the Remote Commander last about 6 months under normal operation. When the batteries become weak or dead, the Remote Commander does not work.

To avoid damage from possible battery leakage

Remove the batteries when you will not use the Remote Commander for a long time.

Nota sobre la duración de las pilas

Las pilas del telemando durarán aproximadamente 6 meses bajo condiciones de funcionamiento normales. Cuando las pilas se debiliten o se descarguen, el telemando no funcionará.

Para evitar daños debidos a posibles fugas de las pilas

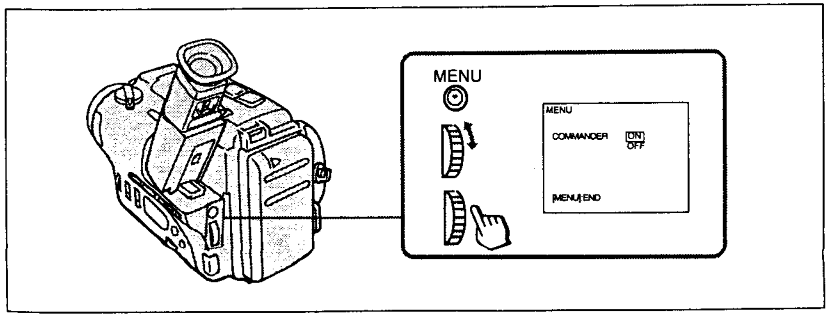
Quite las pilas cuando no piense emplear el telemando durante mucho tiempo.

To Use the Remote Commander

Make sure that the COMMANDER is set to ON in the menu system.

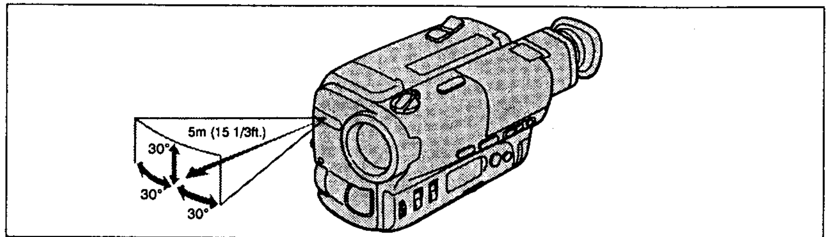
Para emplear el telemando

Asegúrese de que COMMANDER esté en ON en el sistema de menú.



Remote Control Direction

Dirección de control remoto



Notes on the Remote Commander

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works at commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR at commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

To Watch the Demonstration

You can watch a brief demonstration of pictures with special effects.
If the demonstration appears when you turn on the camcorder for the first time, exit the Demo mode to use your camcorder.
To enter Demo mode, (1) Eject the cassette and turn the POWER switch to OFF. **(2)** Turn STANDBY up. **(3)** While holding down ▷, turn the POWER switch to CAMERA. Demonstration starts.
The demonstration stops when you insert the cassette.
Note that once you enter Demo mode, this mode is retained as long as the lithium battery is in place. Therefore, demonstration starts automatically 10 minutes later every time you turn the POWER switch to CAMERA, or after you eject the cassette.
To exit Demo mode, (1) Turn the POWER switch to OFF. **(2)** Turn STANDBY up. **(3)** While holding down □, turn the POWER switch to CAMERA

Notas sobre el telemando

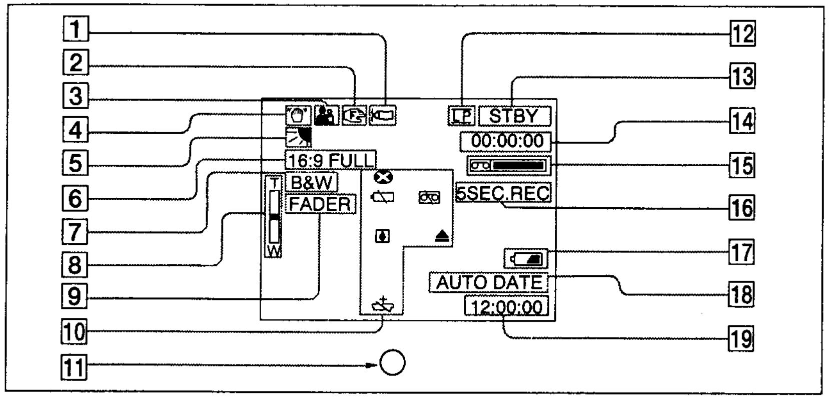
- Mantenga el sensor de señales del telemando alejado de fuentes de luz intensa tales como la iluminación o la luz solar directa. De otra forma, el telemando podrá fallar.
- Asegúrese de que no existan obstáculos entre el sensor de señales del telemando y el telemando.
- Esta videocámara funciona con el modo de telemando VTR 2. Los modos de telemando (1, 2 y 3) se emplean para distinguir esta videocámara de otras videograbadoras Sony y evitar así fallos en la operación de control remoto. Si emplea otra videograbadora Sony en el modo de telemando VTR 2, le recomendamos cambiar el modo de telemando o tapar el sensor de señales del telemando de la videograbadora con un papel negro.

Para ver la demostración

Usted puede ver una breve demostración de imágenes con efectos especiales.
Si al encender la videocámara por primera vez apareciese la demostración, salga del modo de demostración para usar la videocámara.
Para entrar en el modo de demostración, (1) Expulse el casete y gire el conmutador POWER hasta OFF. **(2)** Gire STANDBY hacia arriba. **(3)** Mientras mantiene presionado ▷, gire el conmutador POWER hasta CAMERA. La demostración comenzará
La demostración cesará cuando introduzca un casete.
Tenga en cuenta que una vez que entre en el modo de demostración, este modo se mantendrá siempre y cuando la pila de litio esté instalada. Por lo tanto, la demostración comenzará automáticamente 10 minutos después de cada vez que gire el conmutador POWER hasta CAMERA, o después de que expulse el casete.
Para salir del modo de demostración, (1) Gire el conmutador POWER hata OFF. **(2)** Gire STANDBY hacia arriba. **(3)** Mientras mantiene presionado □, gire el conmutador POWER hasta CAMERA.

In the Viewfinder

En el visor

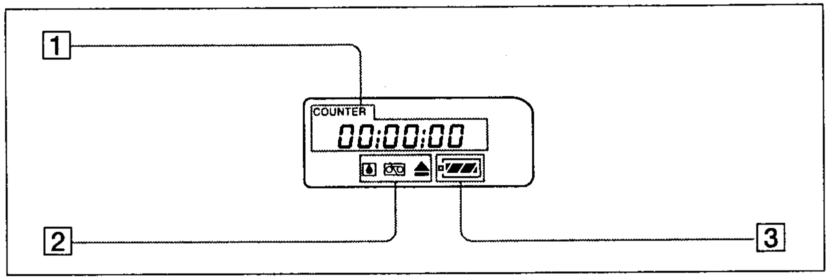


1 **WIND indicator** (p. 39)
2 **Manual focusing** (p. 32)
3 **PROGRAM AE indicator** (p. 29, 30)
4 **Steady shot indicator (CCD-TR580E/TR670E** only) (p. 34)
5 **Back Light indicator** (p. 28)
6 **Wide mode indicator** (p. 40)
7 **PICTURE EFFECT indicator** (p. 35, 36)
8 **Power zoom indicator** (p. 16)
9 **FADER indicator** (p. 31)
10 **Warning indicators** (p. 75)
11 **Recording lamp/Battery lamp**
12 **Recording mode indicator** (p. 47)
13 **Tape transport mode**
14 **Tape counter** (p. 14)
15 **Remaining tape indicator**
▬ → ▬ → ▭ → 5min → 0min
16 **5-second recording indicator** (p. 37)
17 **Remaining battery indicator** (p. 48)
▮ → ▮ → ◢ → ◿ → ▭
18 **AUTO DATE indicator** (p. 12)
19 **Date or Time indicator** (p. 27)

1 **Indicacifión de grabación con viento (WIND)** (página 39)
2 **Enfoque manual** (página 32)
3 **Indicador de exposición automática programada (PROGRAM AE)** (páginas 29, 30)
4 **Indicador de filmación estable (CCD-TR580E/TR670E** solamente) (página 34)
5 **Indicador de compensación de iluminación posterior** (página 28)
6 **Indicación de modo de pantalla alalrgada** (página 40)
7 **Indicador de efecto de imagen (PICTURE EFFECT)** (páginas 35, 36)
8 **Indicador del zoom motorizado** (página 16)
9 **Indicador de fundidos (FADER)** (página 31)
10 **Indicadores de aviso** (página 75)
11 **Lámpara de grabación/batería**
12 **Indicador de modo de grabación** (página 47)
13 **Modo transporte de la cinta**
14 **Contador de cinta** (página 14)
15 **Indicador de cinta restante**
▬ → ▬ → ▭ → 5min → 0min
16 **Indicación de tomas de 5 segundos de grabación** (página 37)
17 **Indicador de carga restante en la batería** (página 48)
▮ → ▮ → ◢ → ◿ → ▭
18 **Indicador AUTO DATE** (página 12)
19 **Indicador de fecha u hora** (página 27)

Identifying the Parts

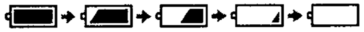
In the Display Window



1 **Tape counter** (p. 14)
Date or time indicator (p. 27)

2 **Warning indicators** (p. 75)

3 **Remaining battery indicator** (p. 48)



Identificación de las partes

En el visualizador

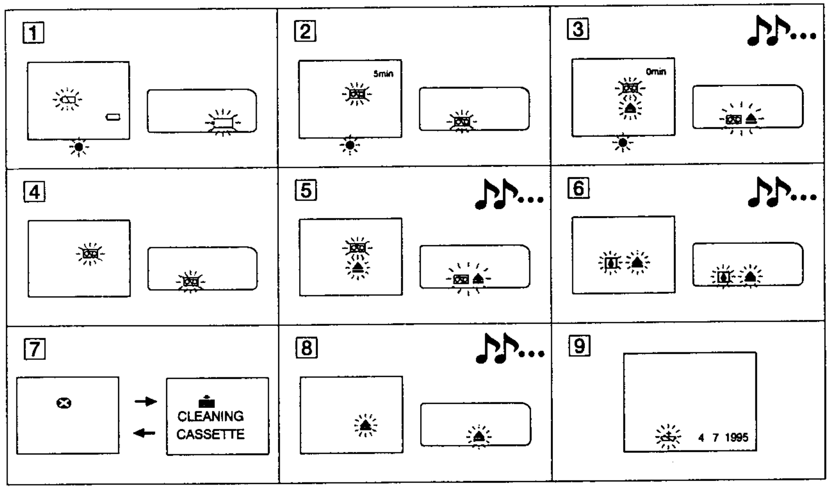
1 **Contador de cinta** (página 14)
Indicador de fecha u hora (página 27)

2 **Indicadores de aviso** (página 75)

3 **Indicador de capacidad restante de la batería** (página 48)

Warning Indicators

If indicators flash in the viewfinder or in the display window, check the following:
♪: you can hear the beep sound when the BEEP is set to ON.



1 **The battery is weak or dead.**
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

2 **The tape is near the end.**
The flashing is slow.

3 **The tape has run out.**
The flashing becomes rapid.

4 **No tape has been inserted.**

5 **The tab on the tape is out (red).**

6 **Moisture condensation has occurred.** (p. 51)

7 **The video heads may be contaminated.** (p. 53)
This indicator appears only on the view finder.

8 **Some other trouble has occurred.**
Disconnect the power source and contact your Sony dealer or local authorized facility.

9 **The lithium battery is weak or is not installed.** (p. 44)

Indicadores de aviso

Si parpadean los indicadores del visor o del visualizador, compruebe lo siguiente:
♪: Podrá oír un pitido cuando BEEP esté en ON.

1 **La batería tiene poca carga o está completamente descargada.**
Parpadeo lento: La batería tiene poca carga.
Parpadeo rápido: La batería está completamente descargada.

2 **La cinta se aproxima al final.**
El parpadeo es lento.

3 **La cinta se ha acabado.**
El parpadeo se vuelve rápido.

4 **No se ha introducido cinta.**

5 **La lengüeta de la cinta está afuera (se ve roja).**

6 **Se ha producido condensación de humedad.** (página 51)

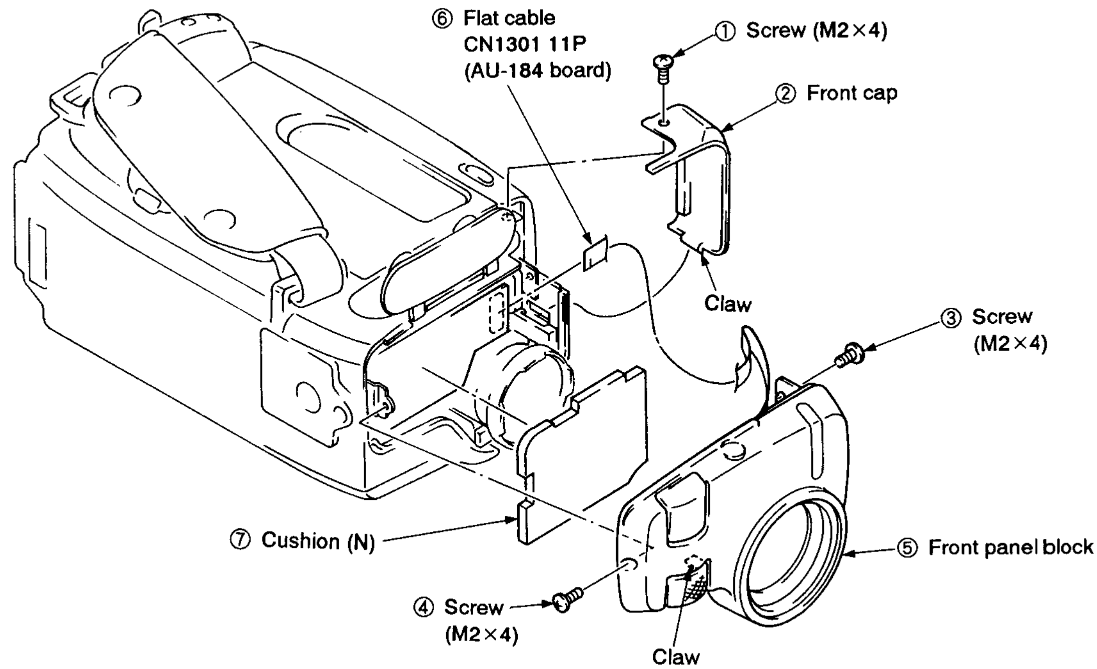
7 **Las cabezas de vídeo tal vez estén sucias.** (página 53)
Este indicador aparece solamente en el visor.

8 **Se ha producido algún problema.**
Desconecte la fuente de alimentación y póngase en contacto con su concesionario Sony o con un centro de reparaciones local autorizado por Sony.

9 **La pila de litio tiene poca carga o no se ha instalado.** (página 44)

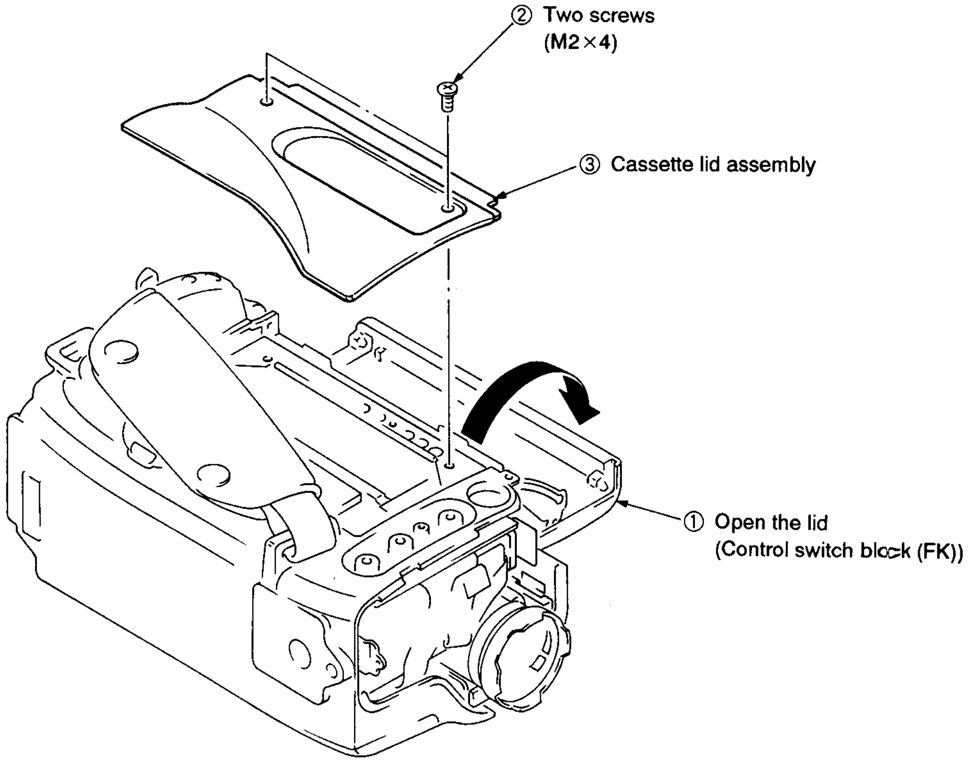
SECTION 2
DISASSEMBLY

2-1. REMOVAL OF FRONT PANEL BLOCK


⑥ Flat cable
CN1301 11P
(AU-184 board)
① Screw (M2×4)
② Front cap
Claw
③ Screw
(M2×4)
⑦ Cushion (N)
⑤ Front panel block
④ Screw
(M2×4)
Claw

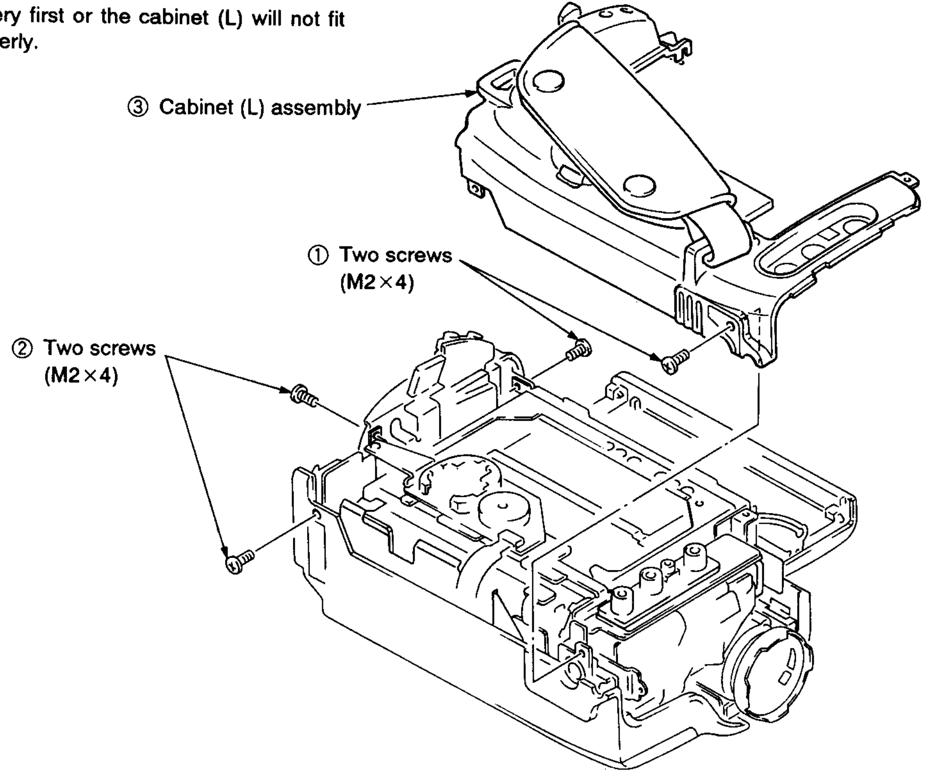
Note :Take care to handle here because it breaks easily

2-2. REMOVAL OF CASSETTE LID ASSEMBLY


② Two screws
(M2×4)
③ Cassette lid assembly
① Open the lid
(Control switch block (FK))

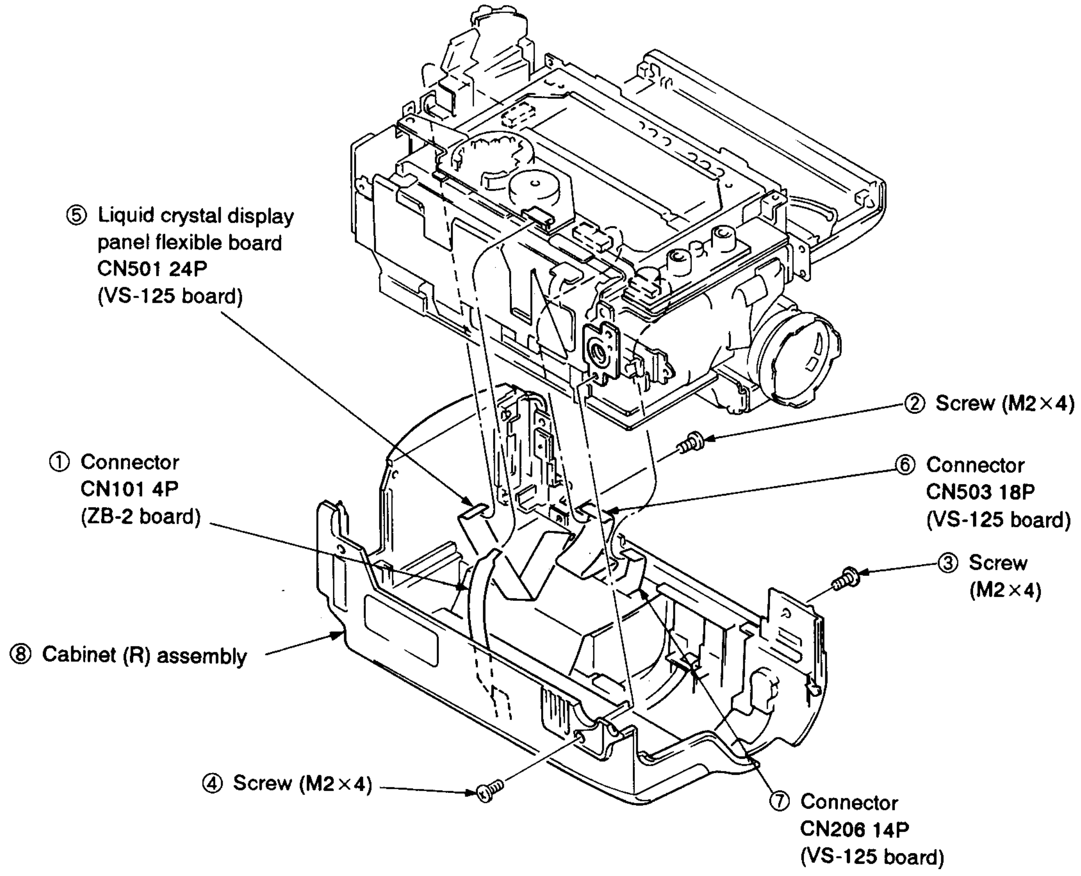
2-3. REMOVAL OF CABINET (L) ASSEMBLY

Note: When incorporating the cabinet (L) block assembly, be sure to remove the lithium battery first or the cabinet (L) will not fit properly.



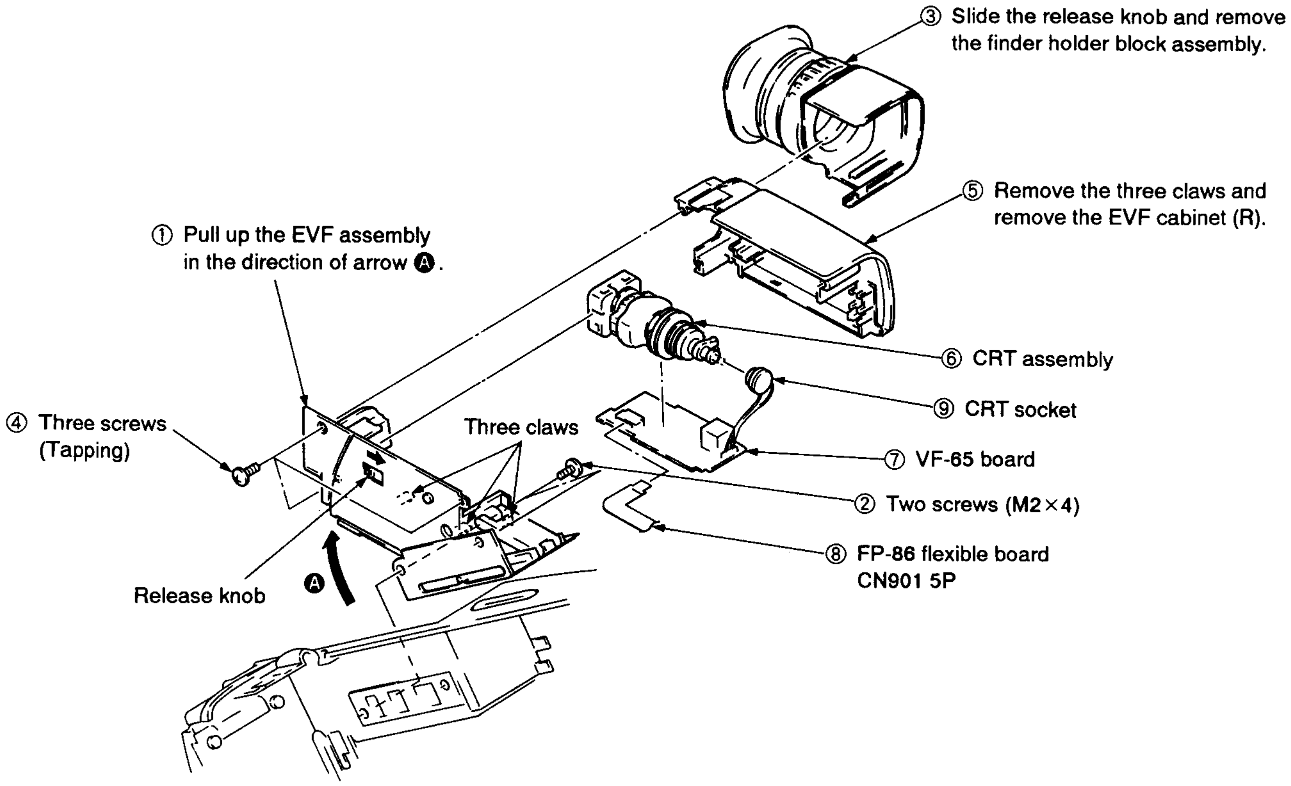
③ Cabinet (L) assembly
① Two screws (M2×4)
② Two screws (M2×4)

2-4. REMOVAL OF CABINET (R) ASSEMBLY

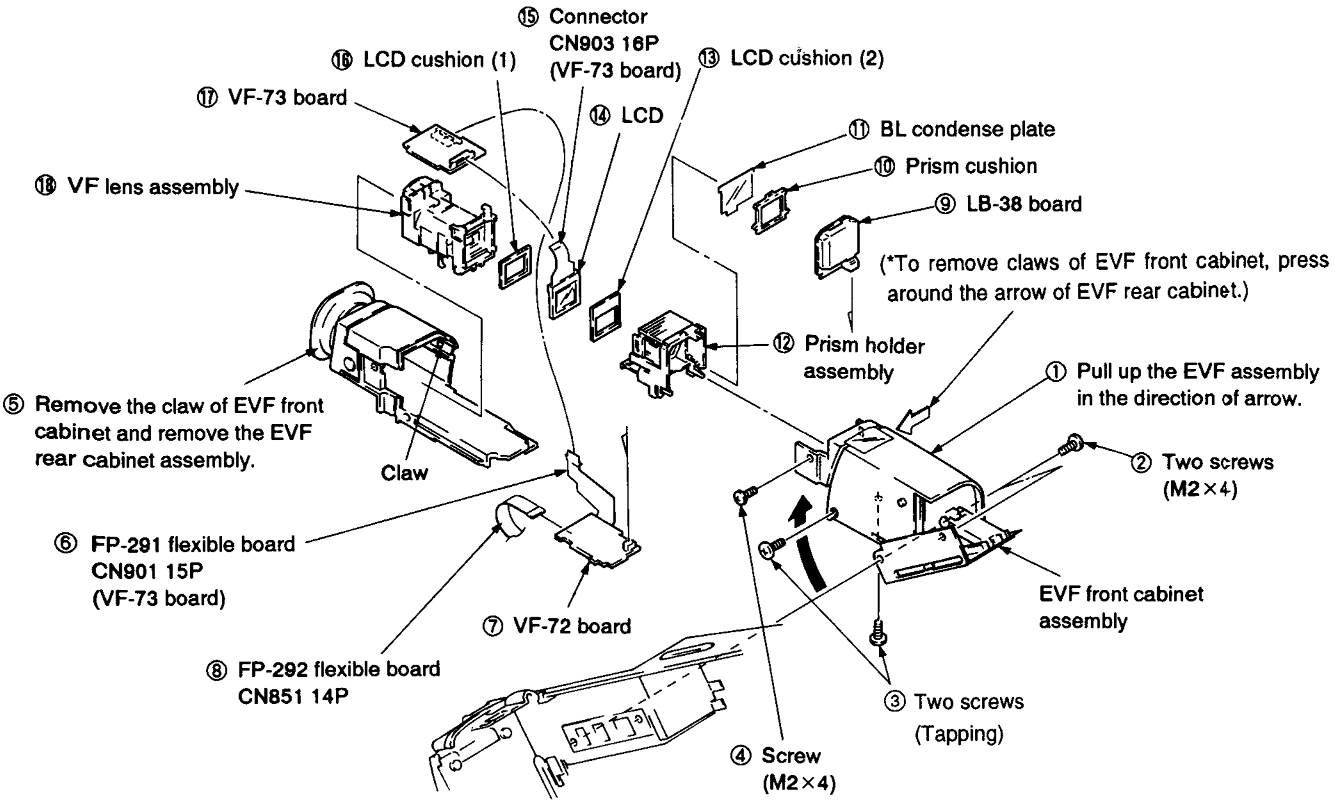


⑤ Liquid crystal display panel flexible board CN501 24P (VS-125 board)
② Screw (M2×4)
① Connector CN101 4P (ZB-2 board)
⑥ Connector CN503 18P (VS-125 board)
③ Screw (M2×4)
⑧ Cabinet (R) assembly
④ Screw (M2×4)
⑦ Connector CN206 14P (VS-125 board)

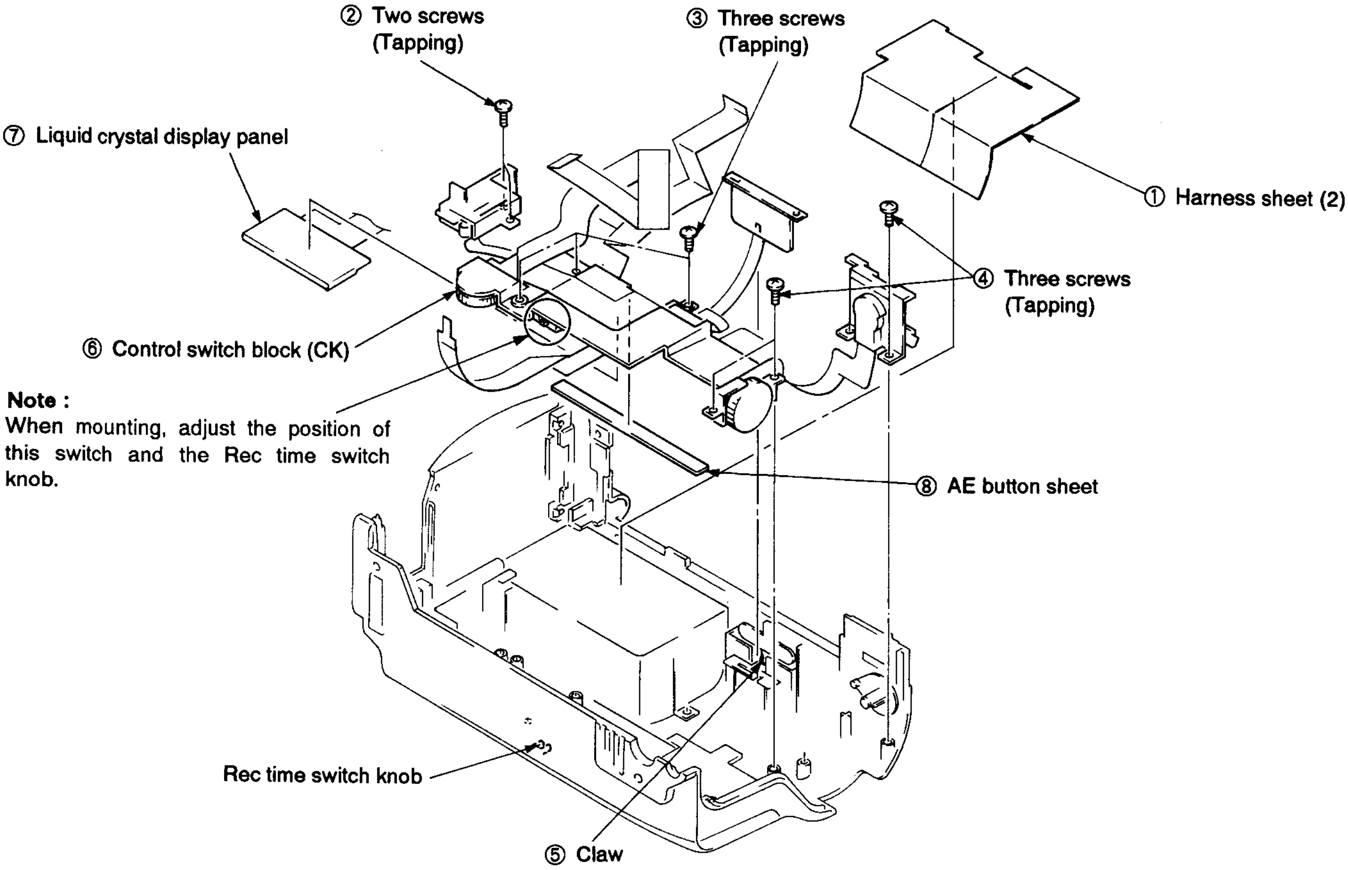
2-5. REMOVAL OF W/B EVF ASSEMBLY


③ Slide the release knob and remove the finder holder block assembly.
⑤ Remove the three claws and remove the EVF cabinet (R).
① Pull up the EVF assembly in the direction of arrow Ⓐ.
⑥ CRT assembly
⑨ CRT socket
④ Three screws (Tapping)
Three claws
⑦ VF-65 board
② Two screws (M2×4)
⑧ FP-86 flexible board CN901 5P
Release knob
Ⓐ

2-5. REMOVAL OF COLOR EVF ASSEMBLY

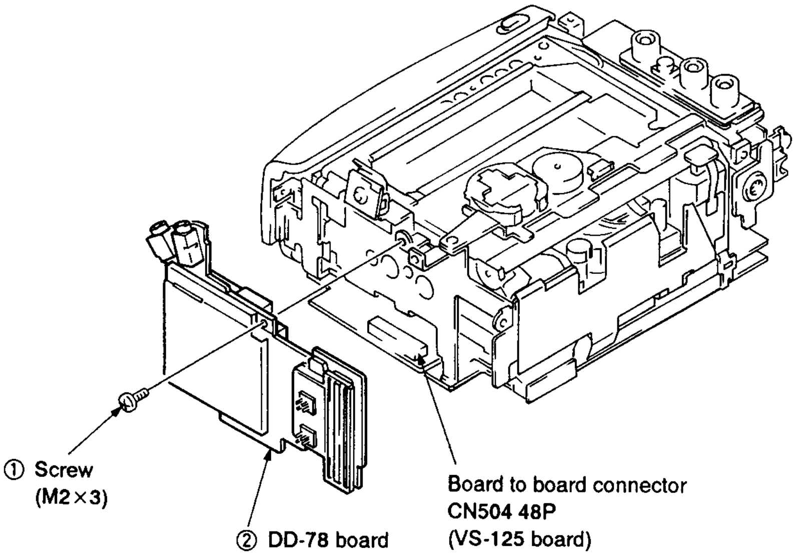

⑮ Connector CN903 16P (VF-73 board)
⑯ LCD cushion (1)
⑬ LCD cushion (2)
⑰ VF-73 board
⑭ LCD
⑪ BL condense plate
⑩ Prism cushion
⑱ VF lens assembly
⑨ LB-38 board
(*To remove claws of EVF front cabinet, press around the arrow of EVF rear cabinet.)
⑫ Prism holder assembly
① Pull up the EVF assembly in the direction of arrow.
⑤ Remove the claw of EVF front cabinet and remove the EVF rear cabinet assembly.
Claw
② Two screws (M2×4)
⑥ FP-291 flexible board CN901 15P (VF-73 board)
EVF front cabinet assembly
⑦ VF-72 board
⑧ FP-292 flexible board CN851 14P
③ Two screws (Tapping)
④ Screw (M2×4)

2-6. REMOVAL OF CONTROL SWITCH BLOCK (CK)

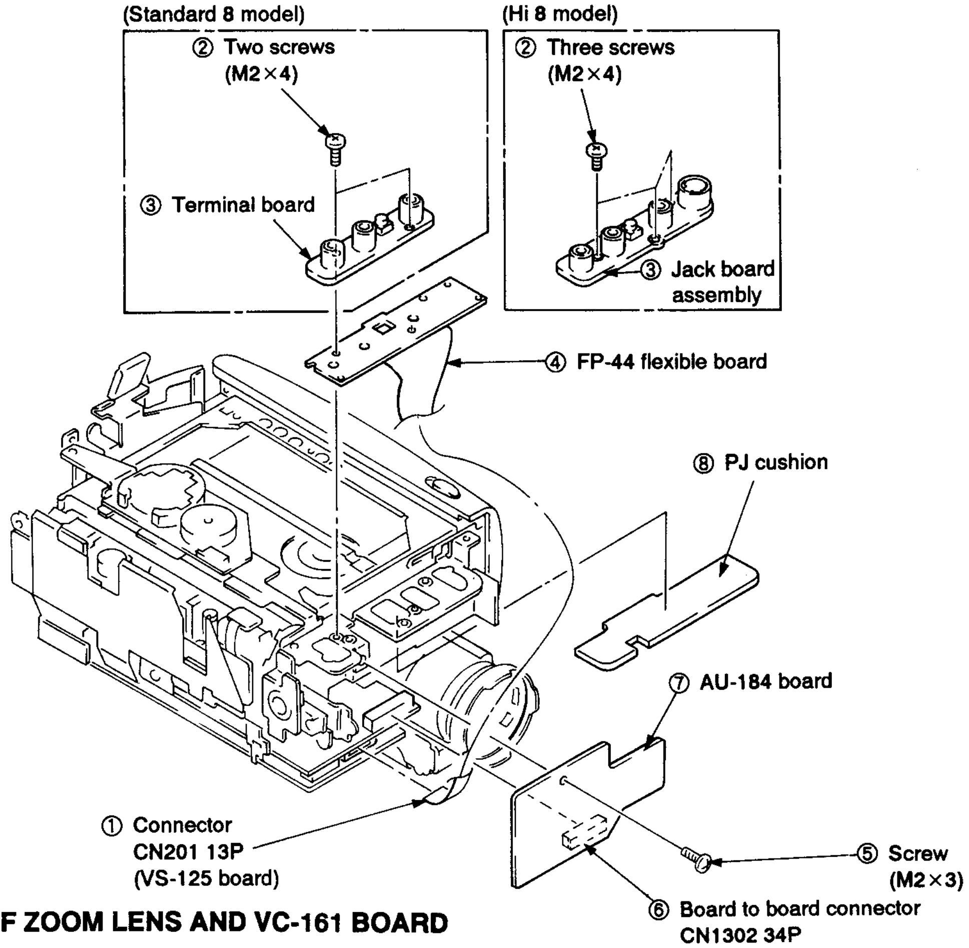

② Two screws
(Tapping)
③ Three screws
(Tapping)
⑦ Liquid crystal display panel
① Harness sheet (2)
④ Three screws
(Tapping)
⑥ Control switch block (CK)
⑧ AE button sheet
Rec time switch knob
⑤ Claw

Note :
When mounting, adjust the position of this switch and the Rec time switch knob.

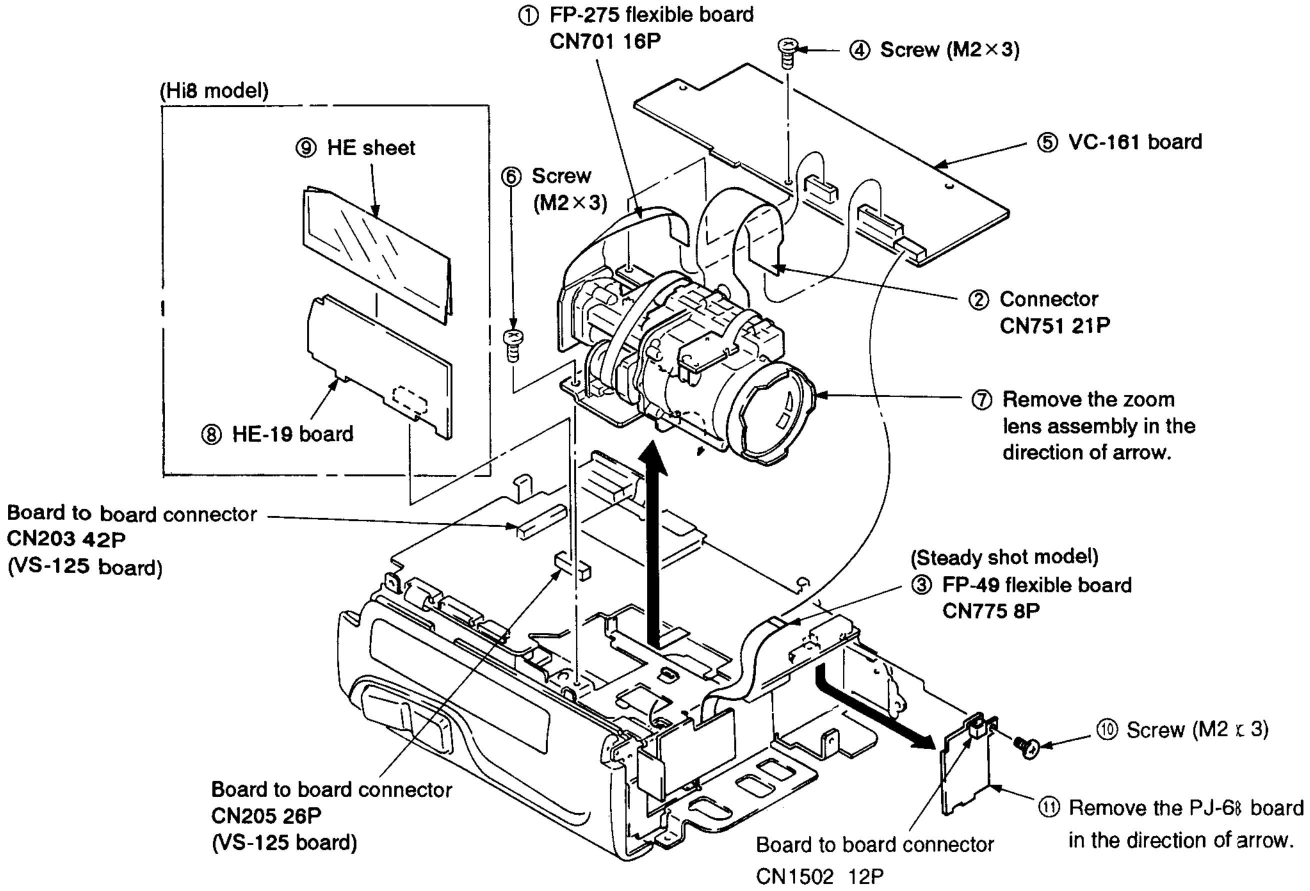
2-7. REMOVAL OF DD-78 BOARD


① Screw
(M2×3)
② DD-78 board
Board to board connector
CN504 48P
(VS-125 board)

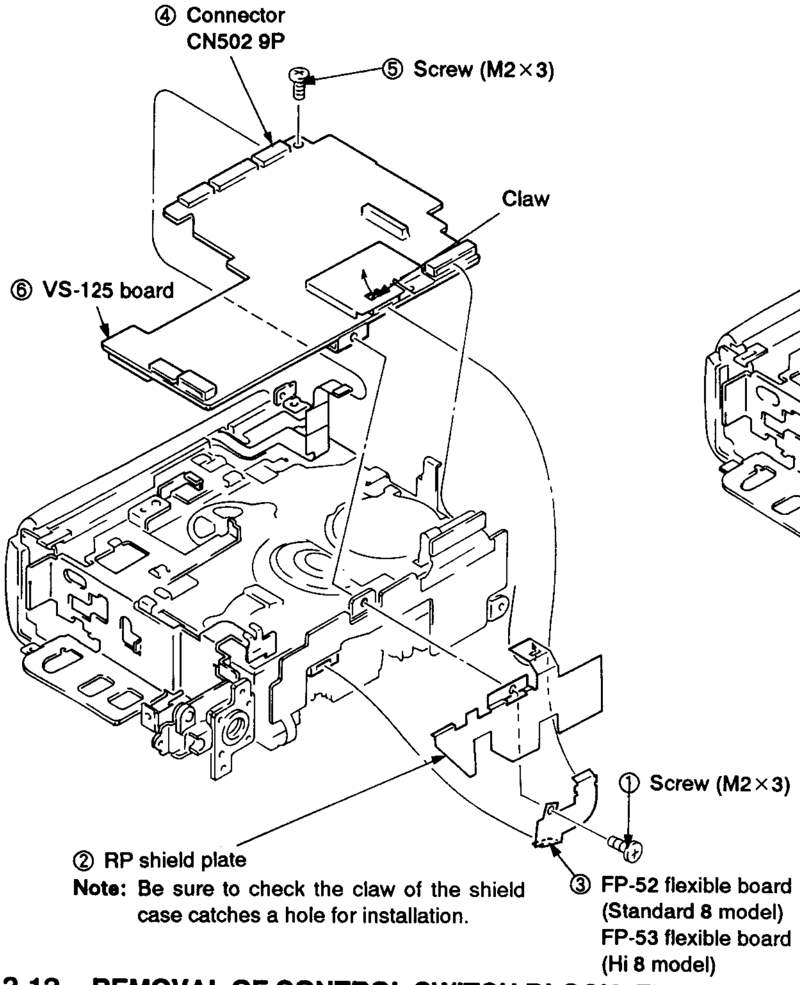
2-8. REMOVAL OF TERMINAL BOARD AND AU-184 BOARD


(Standard 8 model)
(Hi 8 model)
② Two screws (M2×4)
③ Terminal board
② Three screws (M2×4)
③ Jack board assembly
④ FP-44 flexible board
⑧ PJ cushion
⑦ AU-184 board
① Connector CN201 13P (VS-125 board)
⑤ Screw (M2×3)
⑥ Board to board connector CN1302 34P

2-9. REMOVAL OF ZOOM LENS AND VC-161 BOARD

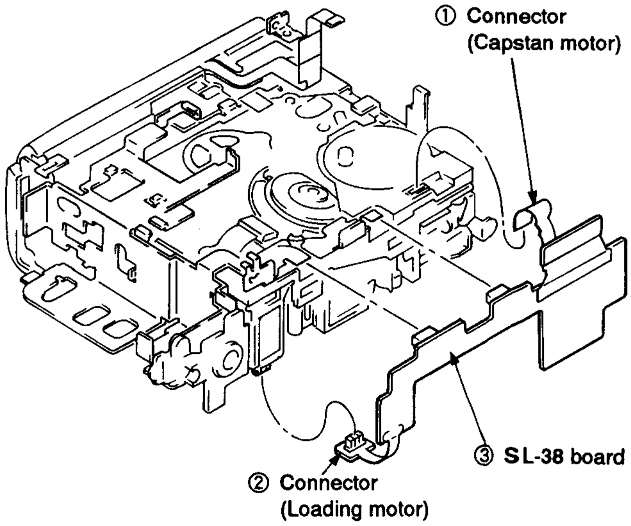

① FP-275 flexible board CN701 16P
④ Screw (M2×3)
(Hi8 model)
⑨ HE sheet
⑧ HE-19 board
⑥ Screw (M2×3)
⑤ VC-161 board
② Connector CN751 21P
⑦ Remove the zoom lens assembly in the direction of arrow.
Board to board connector CN203 42P (VS-125 board)
(Steady shot model)
③ FP-49 flexible board CN775 8P
⑩ Screw (M2 x 3)
⑪ Remove the PJ-68 board in the direction of arrow.
Board to board connector CN205 26P (VS-125 board)
Board to board connector CN1502 12P

2-10. REMOVAL OF VS-125 BOARD

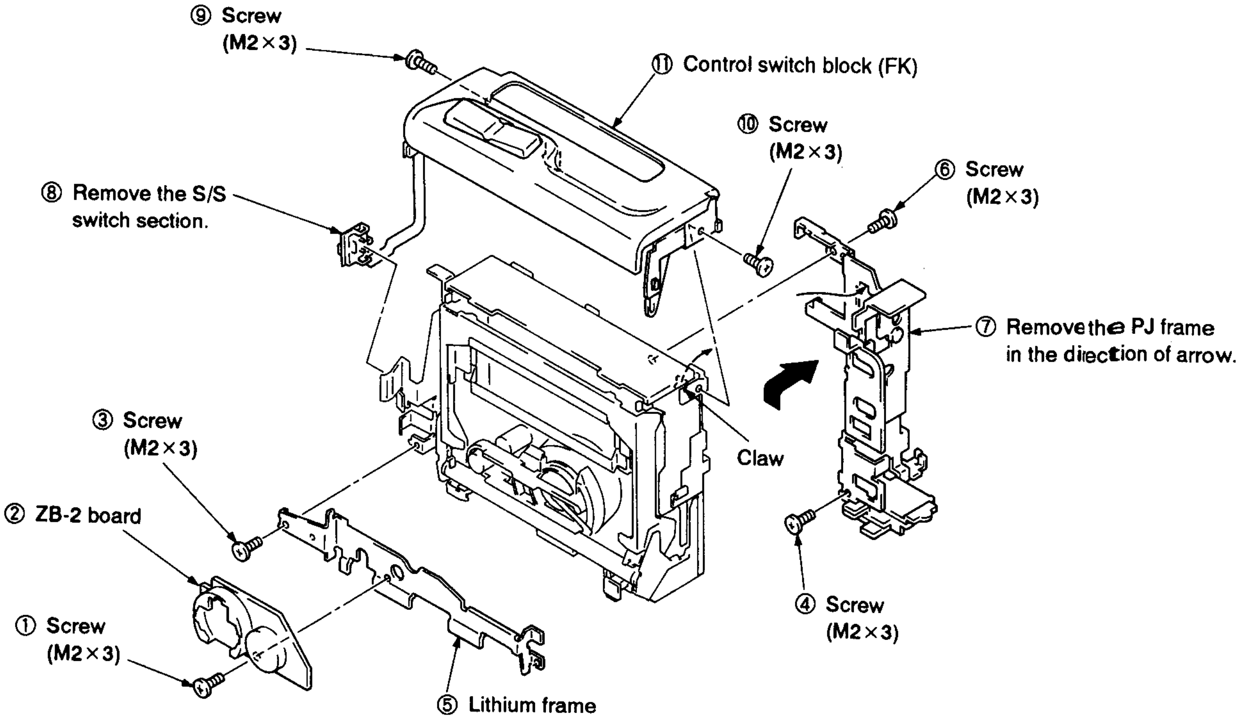

④ Connector
CN502 9P
⑤ Screw (M2×3)
Claw
⑥ VS-125 board
① Screw (M2×3)
② RP shield plate
③ FP-52 flexible board
(Standard 8 model)
FP-53 flexible board
(Hi 8 model)

Note: Be sure to check the claw of the shield case catches a hole for installation.

2-11. REMOVAL OF SL-38 BOARD


① Connector
(Capstan motor)
② Connector
(Loading motor)
③ SL-38 board

2-12. REMOVAL OF CONTROL SWITCH BLOCK (FK) AND ZB-2 BOARD

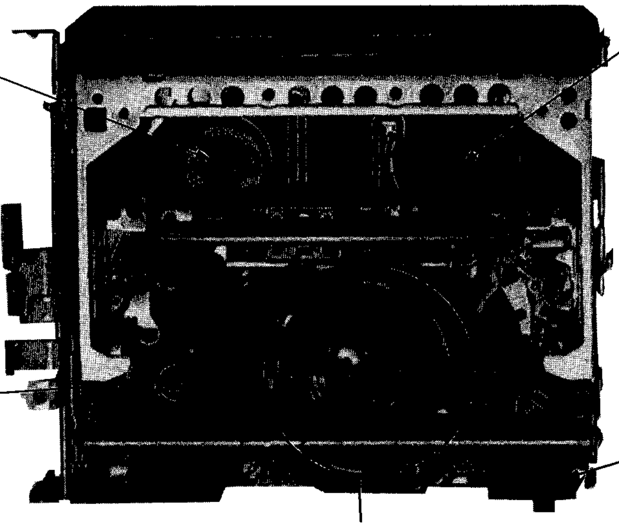

⑨ Screw
(M2×3)
⑪ Control switch block (FK)
⑩ Screw
(M2×3)
⑥ Screw
(M2×3)
⑧ Remove the S/S
switch section.
⑦ Remove the PJ frame
in the direction of arrow.
Claw
③ Screw
(M2×3)
② ZB-2 board
① Screw
(M2×3)
④ Screw
(M2×3)
⑤ Lithium frame

2-13. INTERNAL VIEWS

— Left side —

T reel table assembly
X-3941-274-1

S reel table assembly
X-3944-116-1



M902
Capstan motor

M903
Loading motor assembly
A-7040-304-A

M901 (Standard 8 model)

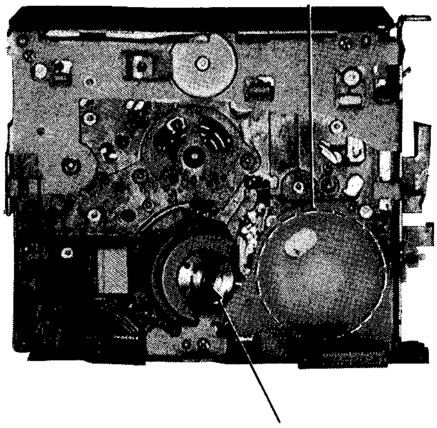
Drum assembly	DGH-90A-R	A-7048-585-A
Upper drum assembly	DGR-90-R	A-7049-521-A

M901 (Hi 8 model)

Drum assembly	DGH-0C3A-R	A-7048-808-A
Upper drum assembly	DGR-94-R	A-7049-607-A

— Right side —

M902
Capstan motor (SCE-0101A)
8-835-477-12

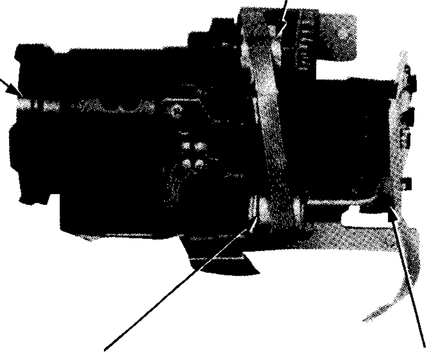


M901
Drum assembly

— Zoom lens —

Device lens (LSV-140A) (TYPE Ⅰ)
8-848-704-01
Zoom lens (VCL-5412WA) (TYPE Ⅱ)
1-547-716-11
Zoom lens (VCL-5412WB) (TYPE Ⅲ)
1-547-739-11

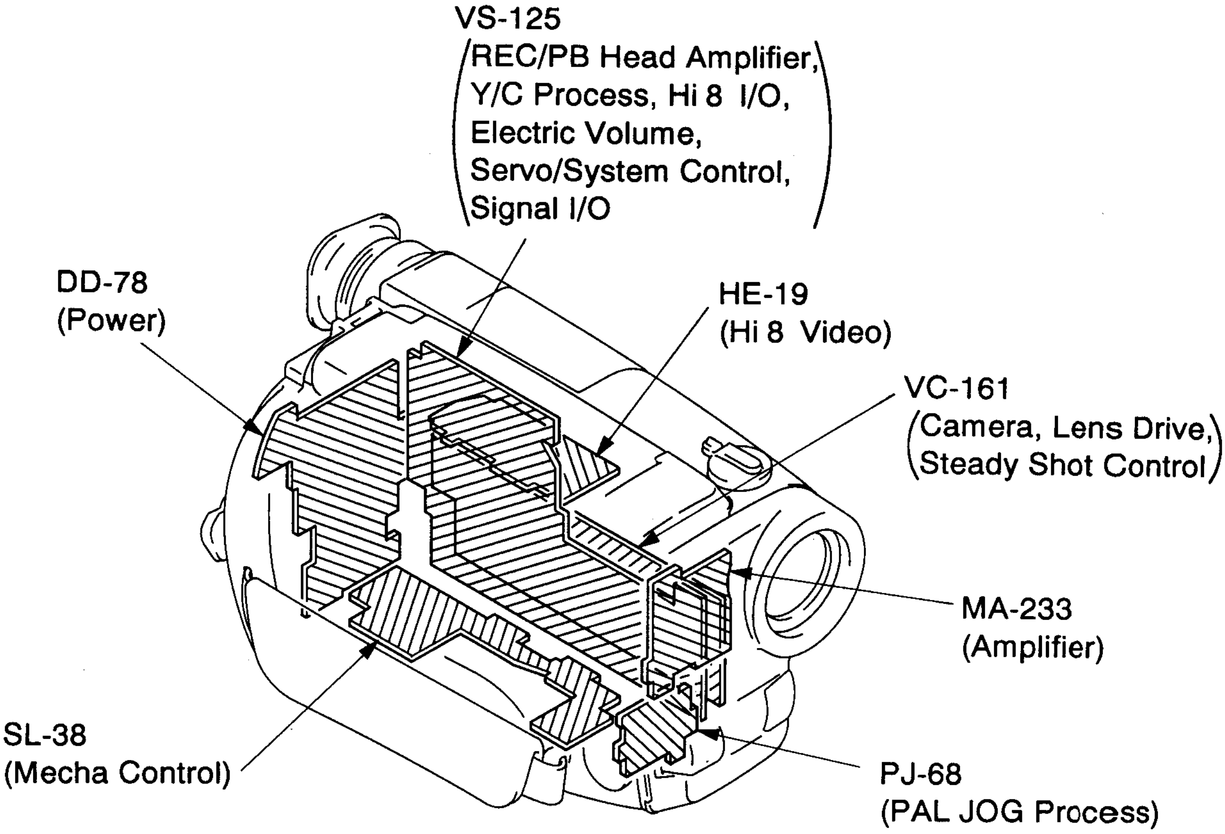
M907 (TYPE Ⅱ)
IG meter
3-708-888-01
M910 (TYPE Ⅲ)
IRIS assembly
3-708-898-01

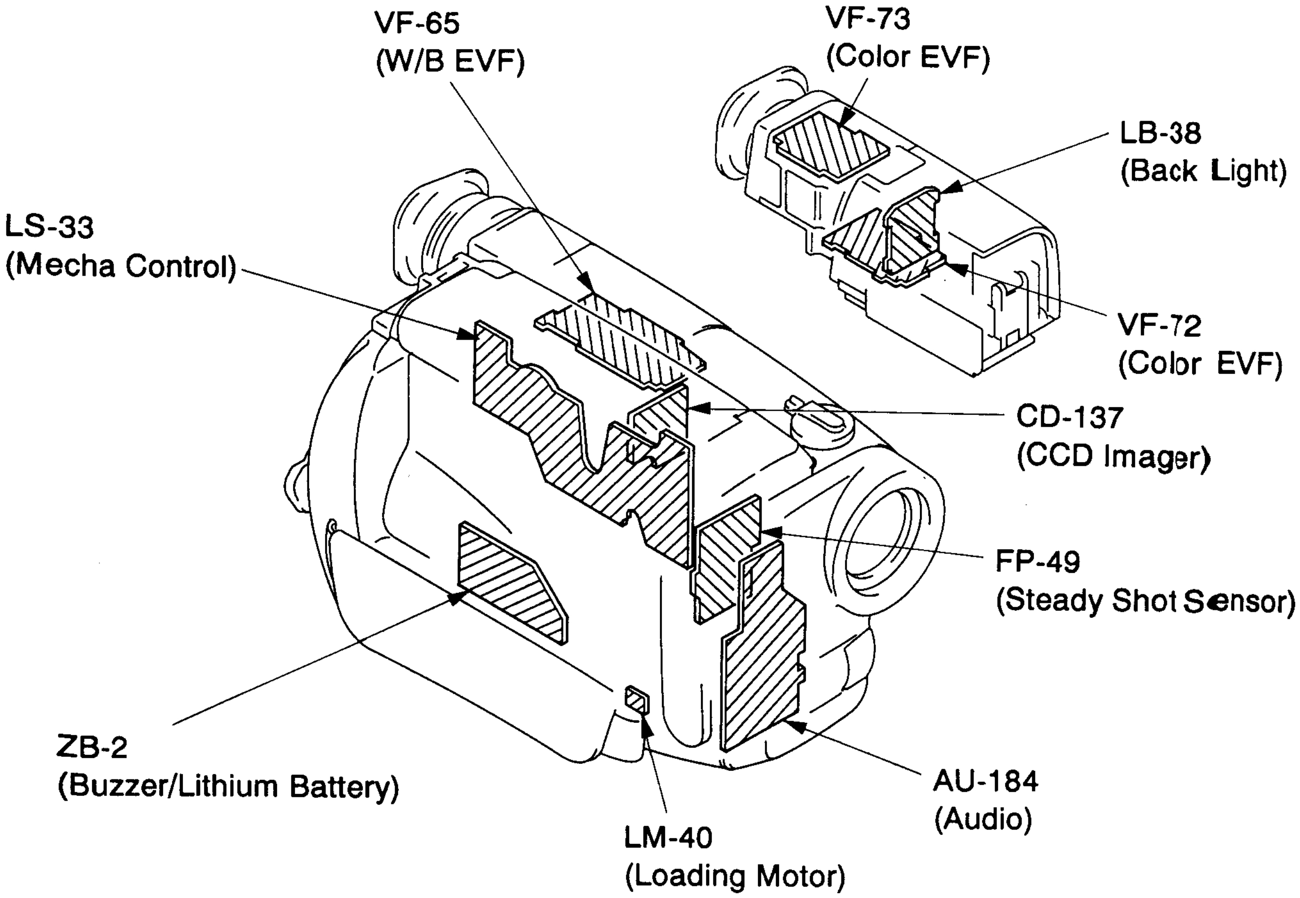


M906 (TYPE Ⅰ)
Zoom motor assembly
1-698-363-01
M909 (TYPE Ⅱ)
Zoom motor assembly
3-708-887-01
M912 (TYPE Ⅲ)
Zoom motor assembly
3-708-896-01

M905 (TYPE Ⅰ)
Focus motor assembly
1-698-364-01
M908 (TYPE Ⅱ)
Focus motor assembly
3-708-889-01
M911 (TYPE Ⅲ)
Focus motor assembly
3-708-897-01

2-14. CIRCUIT BOARDS LOCATION

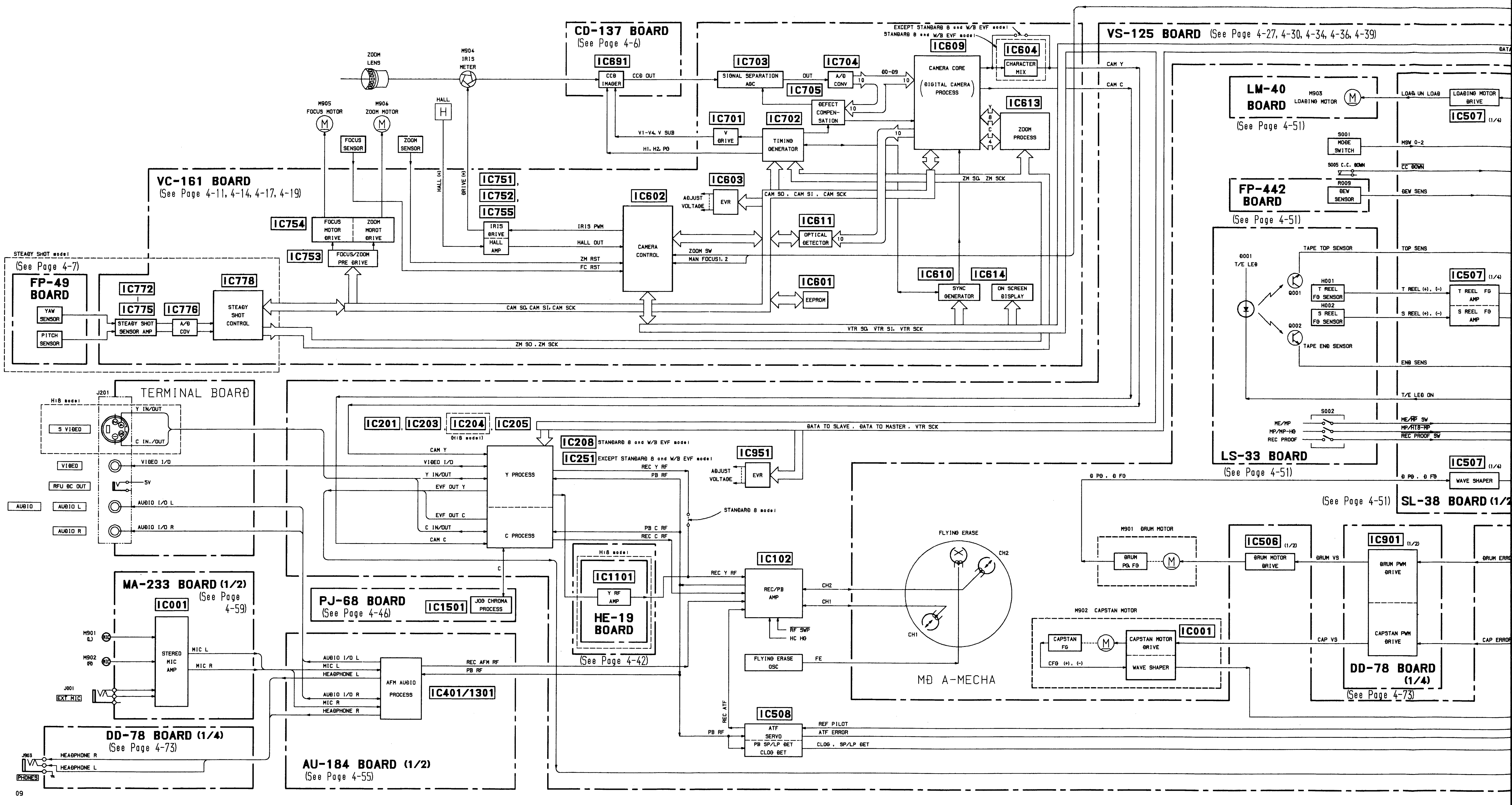

VS-125
(REC/PB Head Amplifier, Y/C Process, Hi 8 I/O, Electric Volume, Servo/System Control, Signal I/O)
DD-78
(Power)
HE-19
(Hi 8 Video)
VC-161
(Camera, Lens Drive, Steady Shot Control)
MA-233
(Amplifier)
SL-38
(Mecha Control)
PJ-68
(PAL JOG Process)


VF-65
(W/B EVF)
VF-73
(Color EVF)
LB-38
(Back Light)
LS-33
(Mecha Control)
VF-72
(Color EVF)
CD-137
(CCD Imager)
FP-49
(Steady Shot Sensor)
ZB-2
(Buzzer/Lithium Battery)
AU-184
(Audio)
LM-40
(Loading Motor)

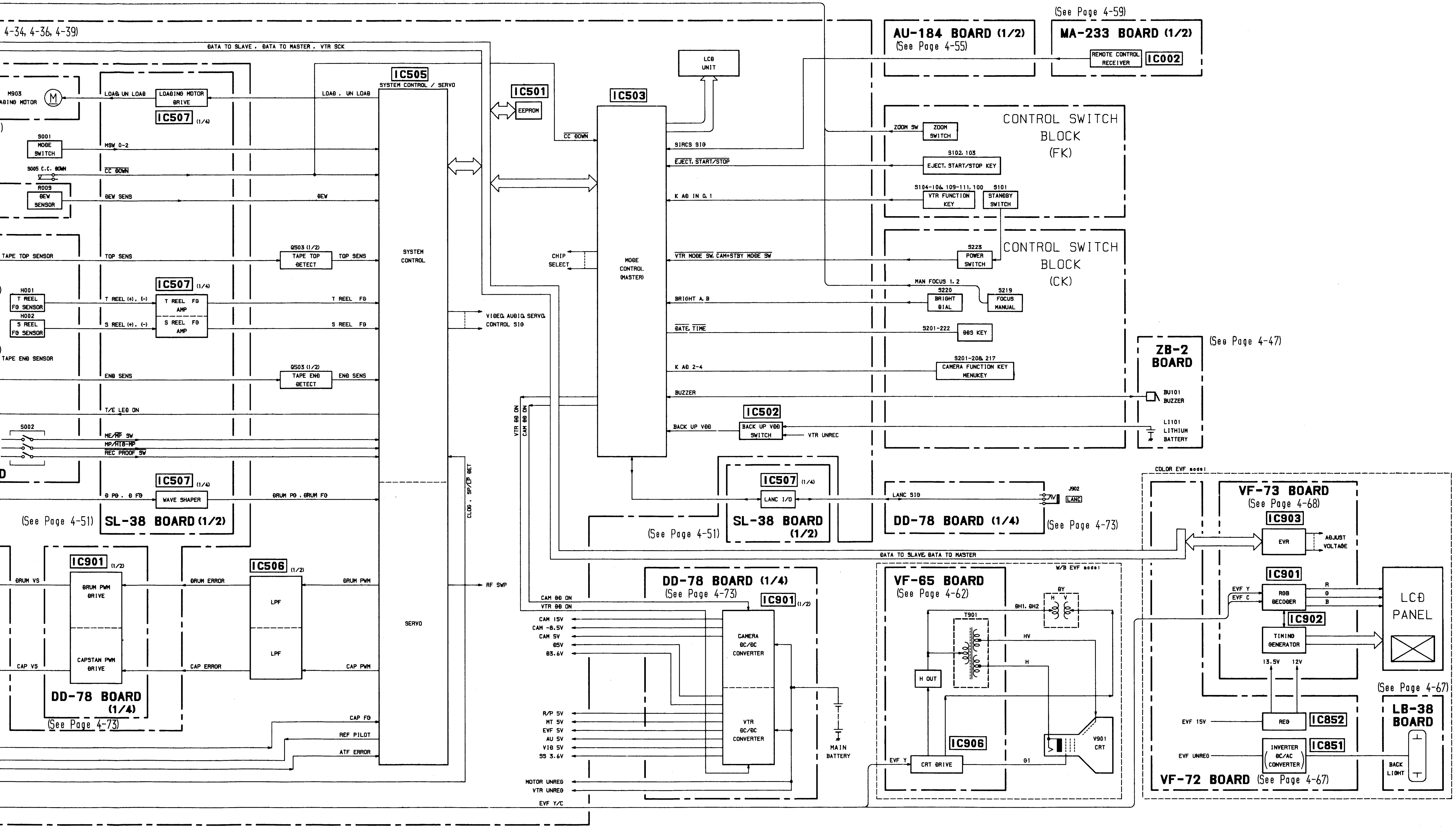
SECTION 3
BLOCK DIAGRAMS

Refer to page 4 as for the distinction of the function table of models and classification.

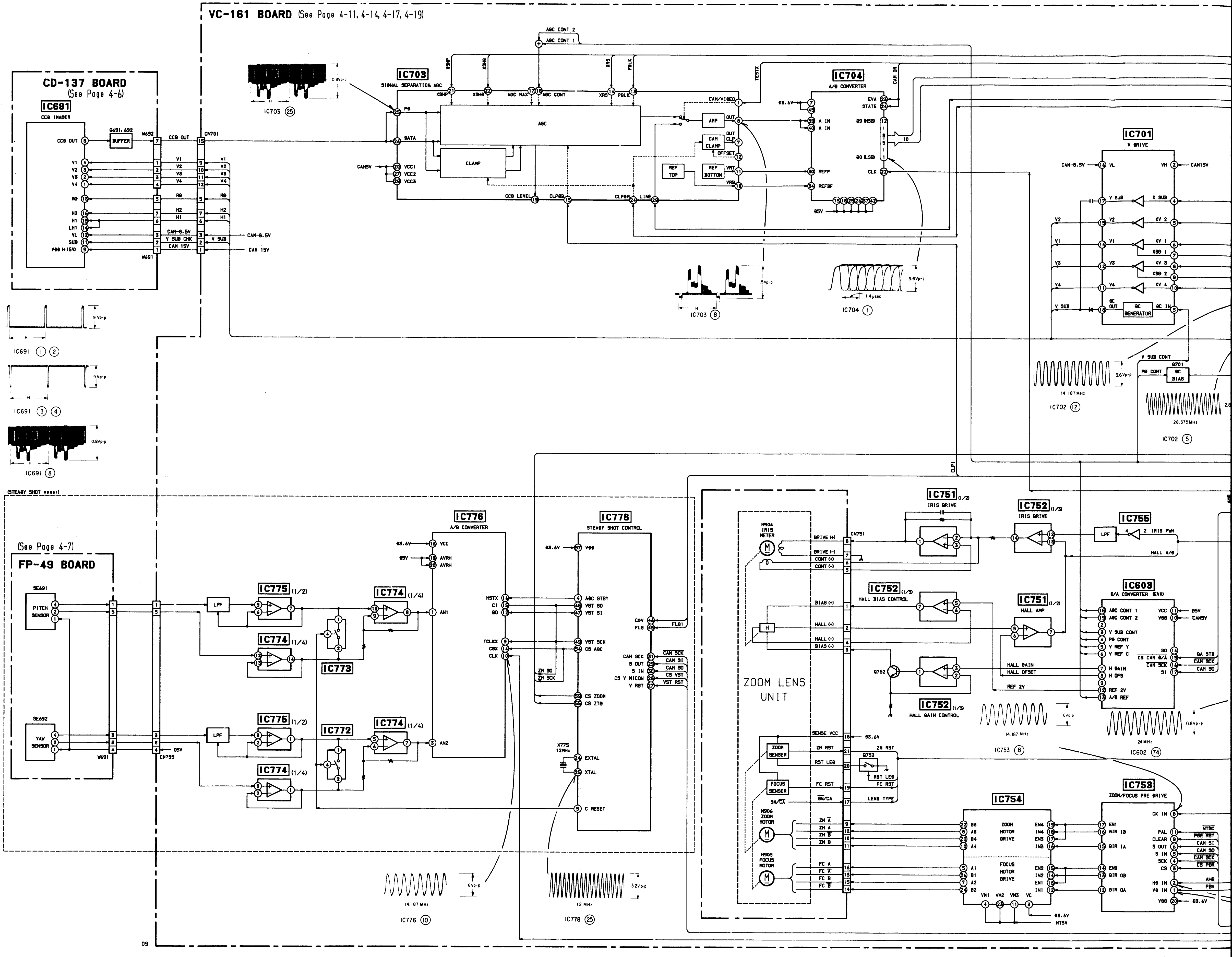
3-1. OVERALL BLOCK DIAGRAM

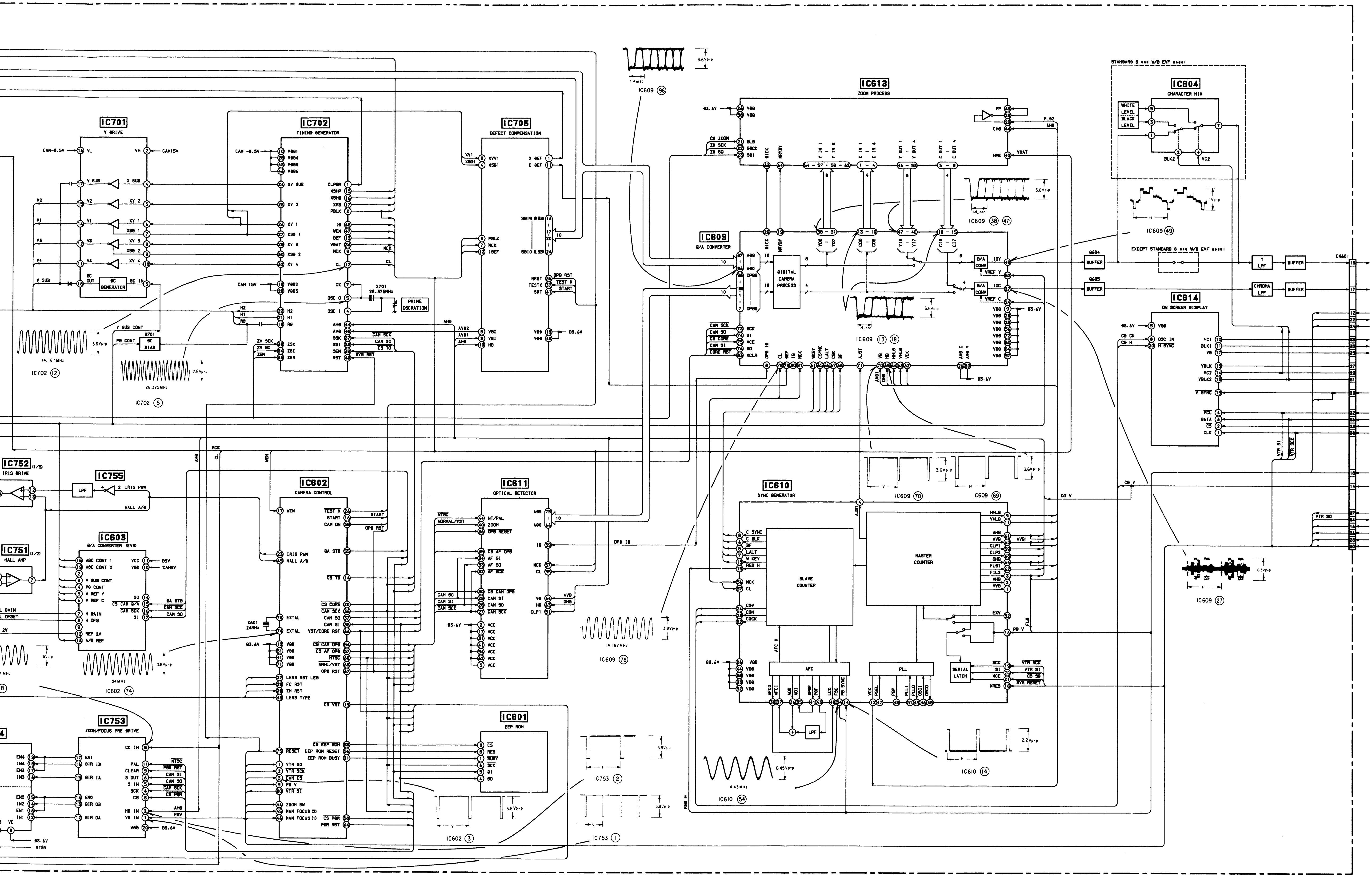


CD-137 BOARD
(See Page 4-6)
IC691
CCD IMAGER
CCD OUT
ZOOM LENS
M904 IRIS METER
HALL
H
M905 FOCUS MOTOR
M906 ZOOM MOTOR
FOCUS SENSOR
ZOOM SENSOR
IC703
SIGNAL SEPARATION AGC
OUT
IC704
A/D CONV
IC705
D0-D9
10
DEFECT COMPEN-SATION
IC701
V DRIVE
IC702
TIMING GENERATOR
V1-V4, V SUB
H1, H2, PG
EXCEPT STANDARD 8 and W/B EVF model
STANDARD 8 and W/B EVF model
IC609
CAMERA CORE
(DIGITAL CAMERA PROCESS)
IC604
CHARACTER MIX
IC613
ZOOM PROCESS
Y
8
C
4
ZM SO, ZM SCK
VC-161 BOARD
(See Page 4-11, 4-14, 4-17, 4-19)
HALL (+)
DRIVE (+)
IC751,
IC752,
IC755
IRIS DRIVE
HALL AMP
IC754
FOCUS MOTOR DRIVE
ZOOM MOROT DRIVE
IC753
FOCUS/ZOOM PRE DRIVE
IRIS PWM
HALL OUT
ZM RST
FC RST
IC602
CAMERA CONTROL
IC603
EVR
ADJUST VOLTAGE
CAM SO, CAM SI, CAM SCK
IC611
OPTICAL DETECTOR
ZOOM SW
MAN FOCUS1, 2
IC601
EEPROM
IC610
SYNC GENERATOR
IC614
ON SCREEN DISPLAY
VTR SO, VTR SI, VTR SCK
STEADY SHOT model
(See Page 4-7)
FP-49 BOARD
YAW SENSOR
PITCH SENSOR
IC772
IC775
STEADY SHOT SENSOR AMP
IC776
A/D COV
IC778
STEADY SHOT CONTROL
CAM SO, CAM SI, CAM SCK
ZM SO, ZM SCK
VS-125 BOARD (See Page 4-27, 4-30, 4-34, 4-36, 4-39)
CAM Y
CAM C
DATA
LM-40 BOARD
M903 LOADING MOTOR
M
(See Page 4-51)
LOAD, UN LOAD
LOADING MOTOR DRIVE
IC507 (1/4)
S001 MODE SWITCH
MSW 0-2
S005 C.C. DOWN
CC DOWN
FP-442 BOARD
R009 DEW SENSOR
DEW SENS
(See Page 4-51)
D001 T/E LED
TAPE TOP SENSOR
TOP SENS
Q001
H001 T REEL FG SENSOR
H002 S REEL FG SENSOR
Q002
TAPE END SENSOR
T REEL (+), (-)
S REEL (+), (-)
IC507 (1/4)
T REEL FG AMP
S REEL FG AMP
END SENS
T/E LED ON
S002
ME/MP
MP/MP-HG
REC PROOF
ME/MP SW
MP/HI8-MP
REC PROOF SW
LS-33 BOARD
(See Page 4-51)
D PG, D FG
IC507 (1/4)
WAVE SHAPER
(See Page 4-51)
SL-38 BOARD (1/2
H18 model
J201
TERMINAL BOARD
S VIDEO
Y IN/OUT
C IN./OUT
VIDEO
VIDEO I/O
RFU DC OUT
5V
AUDIO
AUDIO L
AUDIO R
AUDIO I/O L
AUDIO I/O R
IC201, IC203, IC204, IC205
(H18 model)
CAM Y
VIDEO I/O
Y IN/OUT
EVF OUT Y
EVF OUT C
C IN/OUT
CAM C
Y PROCESS
C PROCESS
DATA TO SLAVE, DATA TO MASTER, VTR SCK
IC208 STANDARD 8 and W/B EVF model
IC251 EXCEPT STANDARD 8 and W/B EVF model
REC Y RF
PB RF
PB C RF
REC C RF
IC951
EVR
ADJUST VOLTAGE
STANDARD 8 model
Hi8 model
IC1101
Y RF AMP
HE-19 BOARD
(See Page 4-42)
IC102
REC/PB AMP
REC Y RF
CH2
CH1
RF SWP
HC HG
FLYING ERASE OSC
FE
REC ATF
PB RF
IC508
ATF SERVO
PB SP/LP DET
CLOG DET
REF PILOT
ATF ERROR
CLOG, SP/LP DET
FLYING ERASE
CH2
CH1
MD A-MECHA
M901 DRUM MOTOR
DRUM PG, FG
IC506 (1/2)
DRUM MOTOR DRIVE
DRUM VS
IC901 (1/2)
DRUM PWM DRIVE
DRUM ERROR
M902 CAPSTAN MOTOR
CAPSTAN FG
CAPSTAN MOTOR DRIVE
WAVE SHAPER
IC001
CFG (+), (-)
CAP VS
CAPSTAN PWM DRIVE
CAP ERROR
DD-78 BOARD (1/4)
(See Page 4-73)
C
PJ-68 BOARD
(See Page 4-46)
IC1501
JOG CHROMA PROCESS
MA-233 BOARD (1/2)
(See Page 4-59)
IC001
STEREO MIC AMP
M901 (L)
M902 (R)
MIC L
MIC R
J001
EXT MIC
AUDIO I/O L
MIC L
HEADPHONE L
AUDIO I/O R
MIC R
HEADPHONE R
AFM AUDIO PROCESS
IC401/1301
REC AFM RF
PB RF
DD-78 BOARD (1/4)
(See Page 4-73)
J903
HEADPHONE R
HEADPHONE L
PHONES
AU-184 BOARD (1/2)
(See Page 4-55)
09

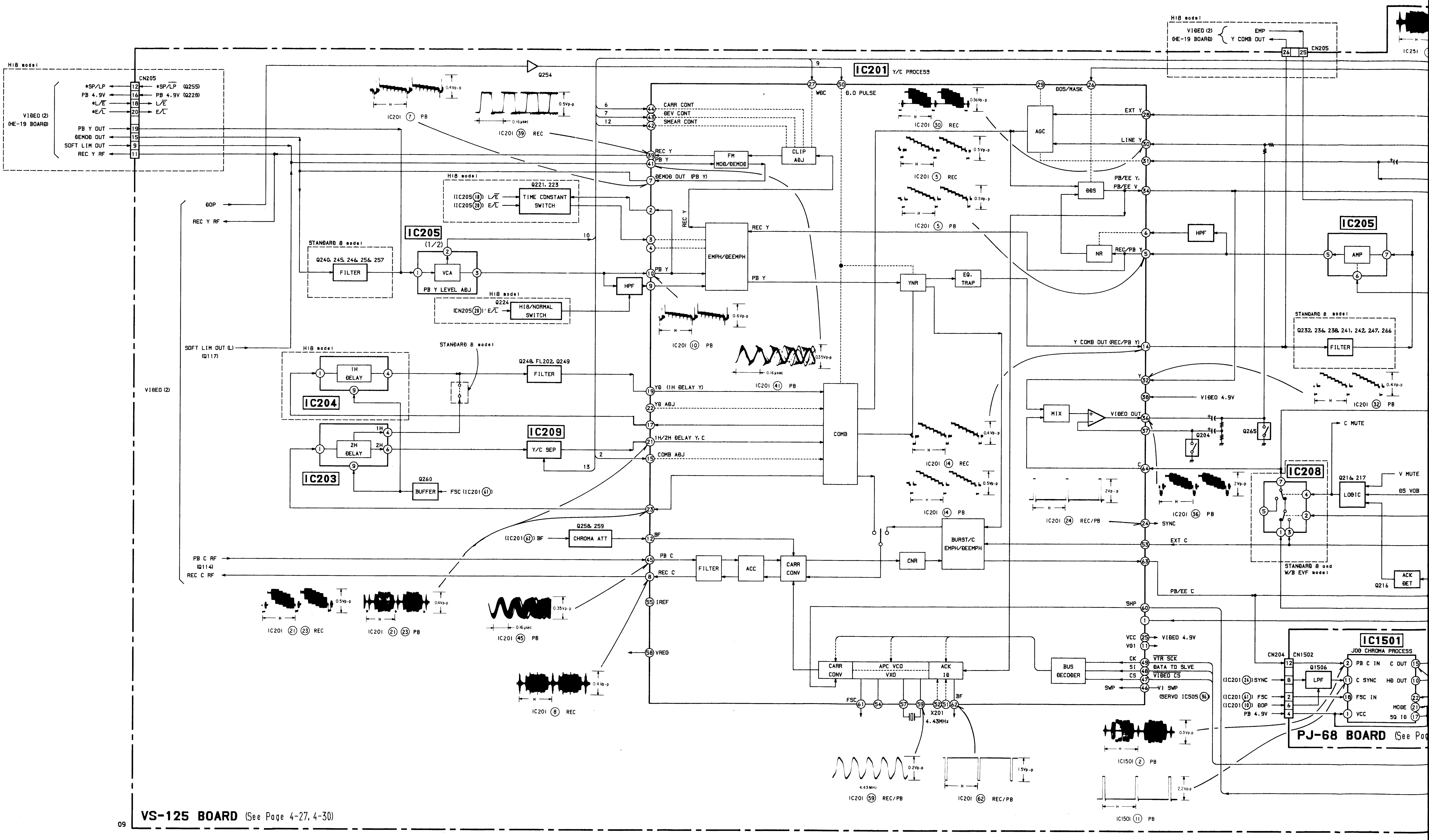

4-34, 4-36, 4-39)
DATA TO SLAVE , DATA TO MASTER , VTR SCK
M903
LOADING MOTOR
S001
MODE SWITCH
S005 C.C. DOWN
R009
DEW SENSOR
TAPE TOP SENSOR
H001
T REEL FG SENSOR
H002
S REEL FG SENSOR
TAPE END SENSOR
S002
LOAD, UN LOAD
LOADING MOTOR DRIVE
IC507 (1/4)
MSW 0-2
CC DOWN
DEW SENS
DEW
TOP SENS
Q503 (1/2)
TAPE TOP DETECT
T REEL (+), (-)
T REEL FG AMP
S REEL (+), (-)
S REEL FG AMP
T REEL FG
S REEL FG
END SENS
TAPE END DETECT
T/E LED ON
ME/MP SW
MP/HI8-MP
REC PROOF SW
D PG , D FG
WAVE SHAPER
DRUM PG , DRUM FG
(See Page 4-51)
SL-38 BOARD (1/2)
IC505
SYSTEM CONTROL / SERVO
LOAD , UN LOAD
SYSTEM CONTROL
SERVO
IC501
EEPROM
VIDEO, AUDIO, SERVO, CONTROL SIO
CLOG , SP/LP DET
RF SWP
IC901 (1/2)
DRUM VS
DRUM PWM DRIVE
CAP VS
CAPSTAN PWM DRIVE
DD-78 BOARD (1/4)
(See Page 4-73)
DRUM ERROR
CAP ERROR
IC506 (1/2)
LPF
LPF
DRUM PWM
CAP PWM
CAP FG
REF PILOT
ATF ERROR
IC503
CC DOWN
CHIP SELECT
MODE CONTROL (MASTER)
LCD UNIT
SIRCS SIO
EJECT, START/STOP
K AD IN 0, 1
VTR MODE SW, CAM+STBY MODE SW
BRIGHT A, B
DATE, TIME
K AD 2-4
BUZZER
BACK UP VDD
IC502
BACK UP VDD SWITCH
VTR UNREG
VTR DD ON
CAM DD ON
IC507 (1/4)
LANC I/O
(See Page 4-51)
SL-38 BOARD (1/2)
DATA TO SLAVE, DATA TO MASTER
DD-78 BOARD (1/4)
(See Page 4-73)
IC901 (1/2)
CAM DD ON
VTR DD ON
CAM 15V
CAM -8.5V
CAM 5V
D5V
D3.6V
CAMERA DC/DC CONVERTER
R/P 5V
MT 5V
EVF 5V
AU 5V
VID 5V
SS 3.6V
VTR DC/DC CONVERTER
MAIN BATTERY
MOTOR UNREG
VTR UNREG
EVF Y/C
(See Page 4-59)
AU-184 BOARD (1/2)
(See Page 4-55)
MA-233 BOARD (1/2)
REMOTE CONTROL RECEIVER
IC002
CONTROL SWITCH BLOCK (FK)
ZOOM SW
ZOOM SWITCH
S102, 103
EJECT, START/STOP KEY
S104-106, 109-111, 100
VTR FUNCTION KEY
S101
STANDBY SWITCH
CONTROL SWITCH BLOCK (CK)
S223
POWER SWITCH
MAN FOCUS 1, 2
S220
BRIGHT DIAL
S219
FOCUS MANUAL
S201-222
DDS KEY
S201-208, 217
CAMERA FUNCTION KEY MENUKEY
ZB-2 BOARD
(See Page 4-47)
BU101
BUZZER
L1101
LITHIUM BATTERY
LANC SIO
J902
LANC
DD-78 BOARD (1/4)
(See Page 4-73)
VF-65 BOARD
(See Page 4-62)
W/B EVF model
DY
H V
DH1, DH2
T901
HV
H
H OUT
IC906
EVF Y
CRT DRIVE
G1
V901 CRT
COLOR EVF model
VF-73 BOARD
(See Page 4-68)
IC903
EVR
ADJUST VOLTAGE
IC901
EVF Y
EVF C
RGB DECODER
R
G
B
IC902
TIMING GENERATOR
13.5V
12V
LCD PANEL
EVF 15V
REG
IC852
EVF UNREG
INVERTER (DC/AC CONVERTER)
IC851
VF-72 BOARD
(See Page 4-67)
(See Page 4-67)
LB-38 BOARD
BACK LIGHT

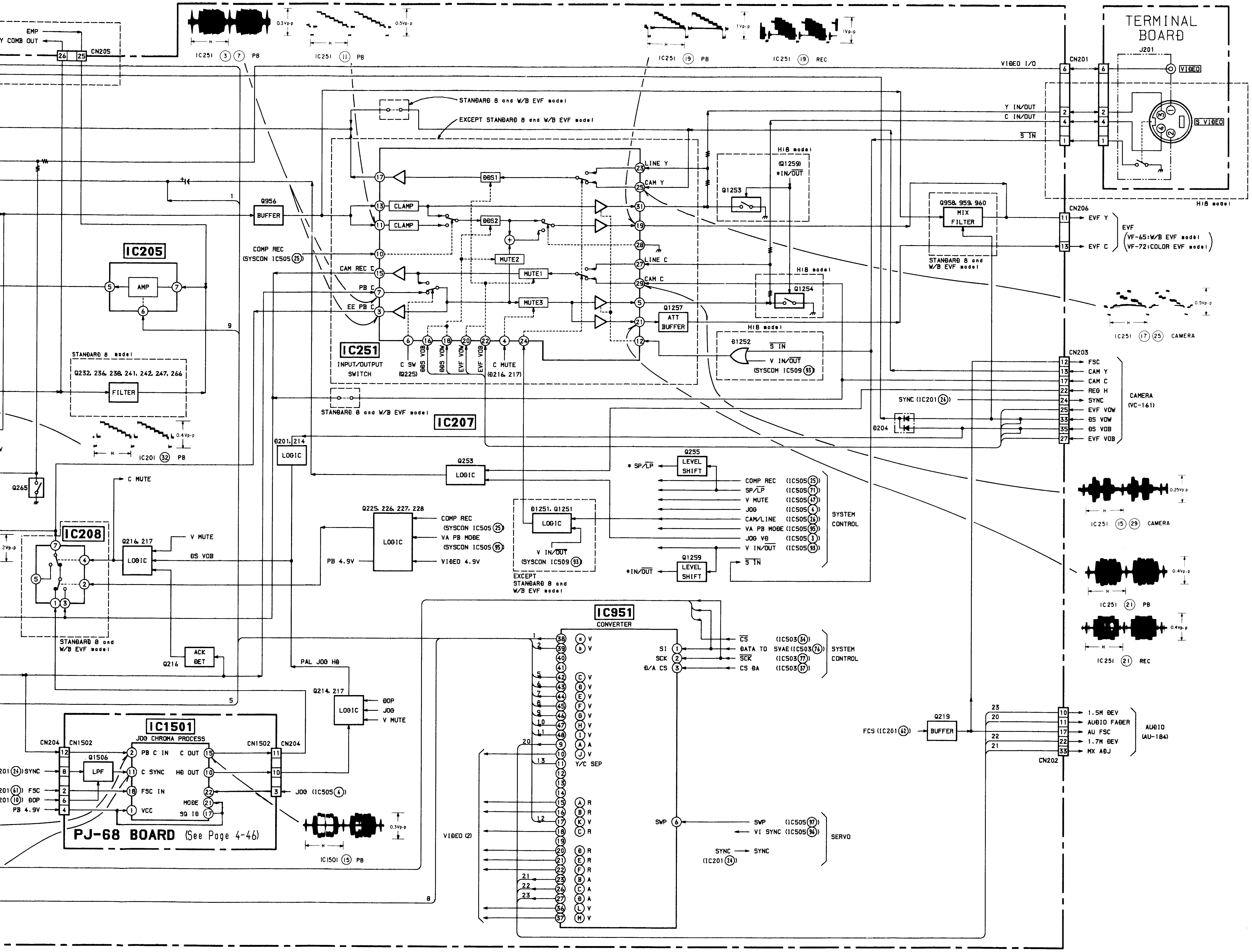
3-2. CAMERA BLOCK DIAGRAM


VC-161 BOARD (See Page 4-11, 4-14, 4-17, 4-19)
CD-137 BOARD (See Page 4-6)
IC691 CCD IMAGER
Q691, 692 BUFFER
CCD OUT
V1 V2 V3 V4 RG H2 H1 LH1 VL SUB VDD (+15V)
CN701
CAM-8.5V
V SUB
CAM 15V
IC703 SIGNAL SEPARATION, AGC
XSHP XSHD AGC MAX AGC CONT XRS PBLK
AGC CONT 2
AGC CONT 1
PG DATA VCC1 VCC2 VCC3
AGC
CLAMP
CAM/VIDEO
AMP
CAM CLAMP
OFFSET
REF TOP
REF BOTTOM
CCD LEVEL CLPDB CLPDM LINE
IC704 A/D CONVERTER
EVA STATE
A IN
D9 (MSB)
D0 (LSB)
CLK
REFF
REFBF
IC701 V DRIVE
X SUB
XV 2 XV 1 XSG 1 XV 3 XSG 2 XV 4
DC GENERATOR
Q701 DC BIAS
V SUB CONT
IC703 ㉕
0.8Vp-p
IC703 ⑧
1.5Vp-p
IC704 ①
3.6Vp-p
1.4μsec
IC691 ① ②
9Vp-p
IC691 ③ ④
IC691 ⑧
IC702 ⑫
14.187MHz
IC702 ⑤
28.375MHz
(STEADY SHOT model)
(See Page 4-7)
FP-49 BOARD
SE691 PITCH SENSOR
SE692 YAW SENSOR
W691
CN755
LPF
IC775 (1/2)
IC774 (1/4)
IC773
IC772
IC776 A/D CONVERTER
VCC AVRH AVRL AN1 AN2
HSTX CI SO TCLKX CSX CLK
IC778 STEADY SHOT CONTROL
AD STBY VST SO VST SI VST SCK CS ADC
CAM SCK CAM SI CAM SO CS VST V RST
CS ZOOM CS ZTS
X775 12MHz
EXTAL XTAL
C RESET
CDV FLG
IC776 ⑩
14.187MHz
6Vp-p
IC778 ㉕
12MHz
3.2Vp-p
ZOOM LENS UNIT
M904 IRIS METER
M906 ZOOM MOTOR
M905 FOCUS MOTOR
ZOOM SENSER
FOCUS SENSER
CN751
DRIVE (+) DRIVE (-) CONT (+) CONT (-)
BIAS (+) HALL (+) HALL (-) BIAS (-)
SENSE VCC ZM RST RST LED FC RST SW/CA
ZM A ZM B FC A FC B
Q752
RST LED
LENS TYPE
IC751 (1/2) IRIS DRIVE
IC752 (1/3) IRIS DRIVE
IC752 (1/3) HALL BIAS CONTROL
IC751 (1/2) HALL AMP
IC752 (1/3) HALL GAIN CONTROL
IC755
IRIS PWM
HALL A/D
IC603 D/A CONVERTER (EVR)
AGC CONT 1 AGC CONT 2 V SUB CONT PG CONT V REF Y V REF C H GAIN H OFS REF 2V A/D REF
HALL GAIN
HALL OFSET
REF 2V
IC753 ⑧
14.187MHz
6Vp-p
IC602 ⑭
24MHz
0.8Vp-p
IC754
ZOOM MOTOR DRIVE
FOCUS MOTOR DRIVE
IC753 ZOOM/FOCUS PRE DRIVE
CK IN PAL CLEAR S OUT S IN SCK CS HD IN VD IN VDD
D3.6V
MT5V


IC701
V DRIVE
IC702
TIMING GENERATOR
IC705
DEFECT COMPENSATION
PRIME OSCRATION
X701 28.375MHz
IC702 ⑫
14.187MHz
IC702 ⑤
28.375MHz
IC609 ⑯
1.4µsec
3.6Vp-p
IC613
ZOOM PROCESS
IC609
D/A CONVERTER
DIGITAL CAMERA PROCESS
D/A CONV
IC609 ㊳ ㊼
IC609 ⑬ ⑱
IC609 ㊾
IC604
CHARACTER MIX
STANDARD 8 and W/B EVF model
EXCEPT STANDARD 8 and W/B EVF model
WHITE LEVEL
BLACK LEVEL
Q604 BUFFER
Q605 BUFFER
Y LPF
CHROMA LPF
BUFFER
IC614
ON SCREEN DISPLAY
CN601
CAM Y
CAM C
VIDEO (1) (VB-125)
SYSTEM CONTROL (VB-125)
IC752 (1/3)
IRIS DRIVE
IC755
LPF
IC751 (1/2)
HALL AMP
IC603
D/A CONVERTER (EVR)
IC602 ㊹
24MHz
X601 24MHz
IC602
CAMERA CONTROL
IC611
OPTICAL DETECTOR
IC601
EEP ROM
IC753
ZOOM/FOCUS PRE DRIVE
IC602 ③
IC753 ②
IC753 ①
IC609 ㊽
14.187MHz
IC610
SYNC GENERATOR
SLAVE COUNTER
MASTER COUNTER
AFC
PLL
LPF
SERIAL LATCH
IC609 ⑳
IC609 ㉙
IC609 ㉗
IC610 ⑭
IC610 ㊹
4.43MHz
0.45Vp-p

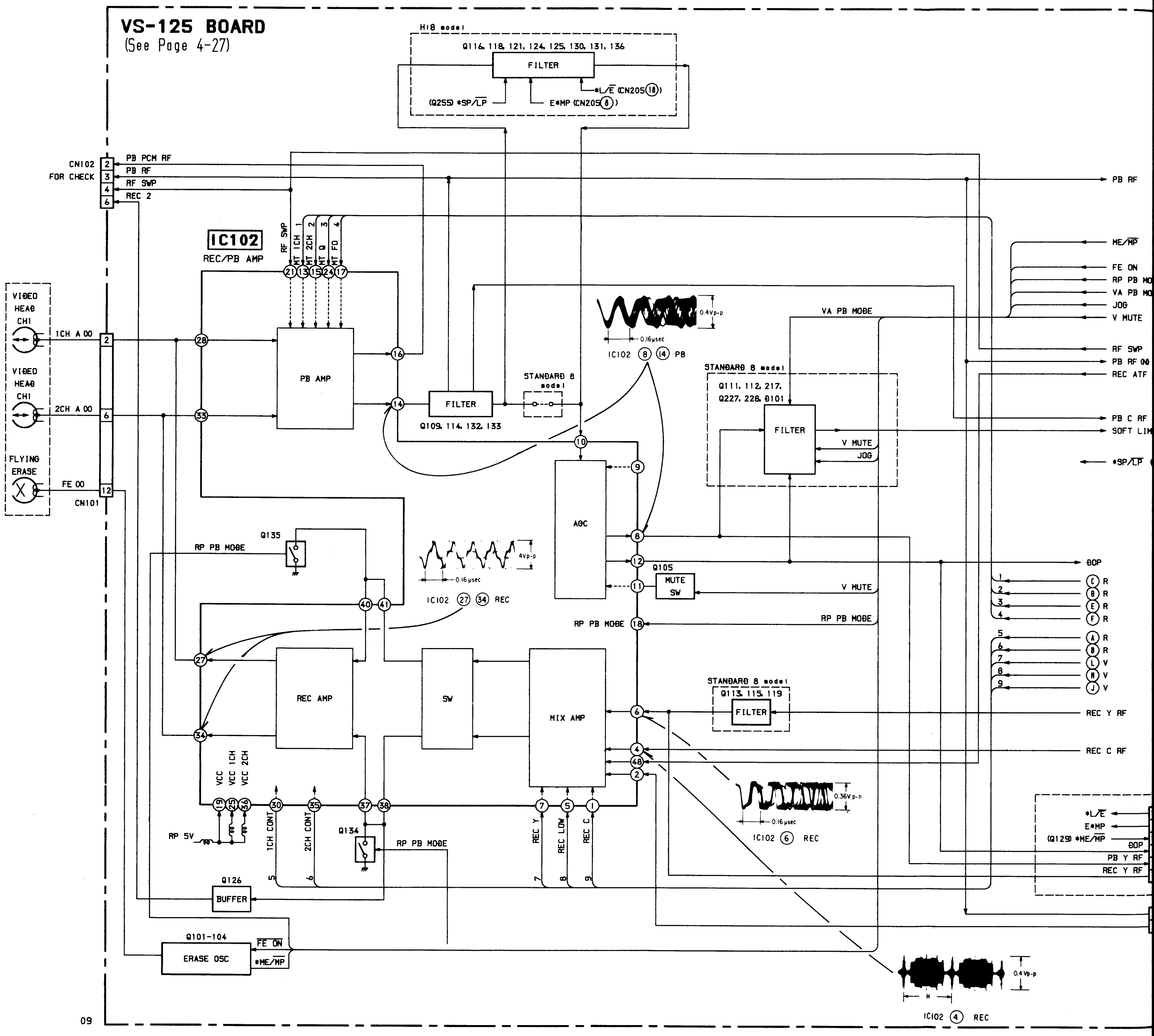
3-3. VIDEO (1) BLOCK DIAGRAM

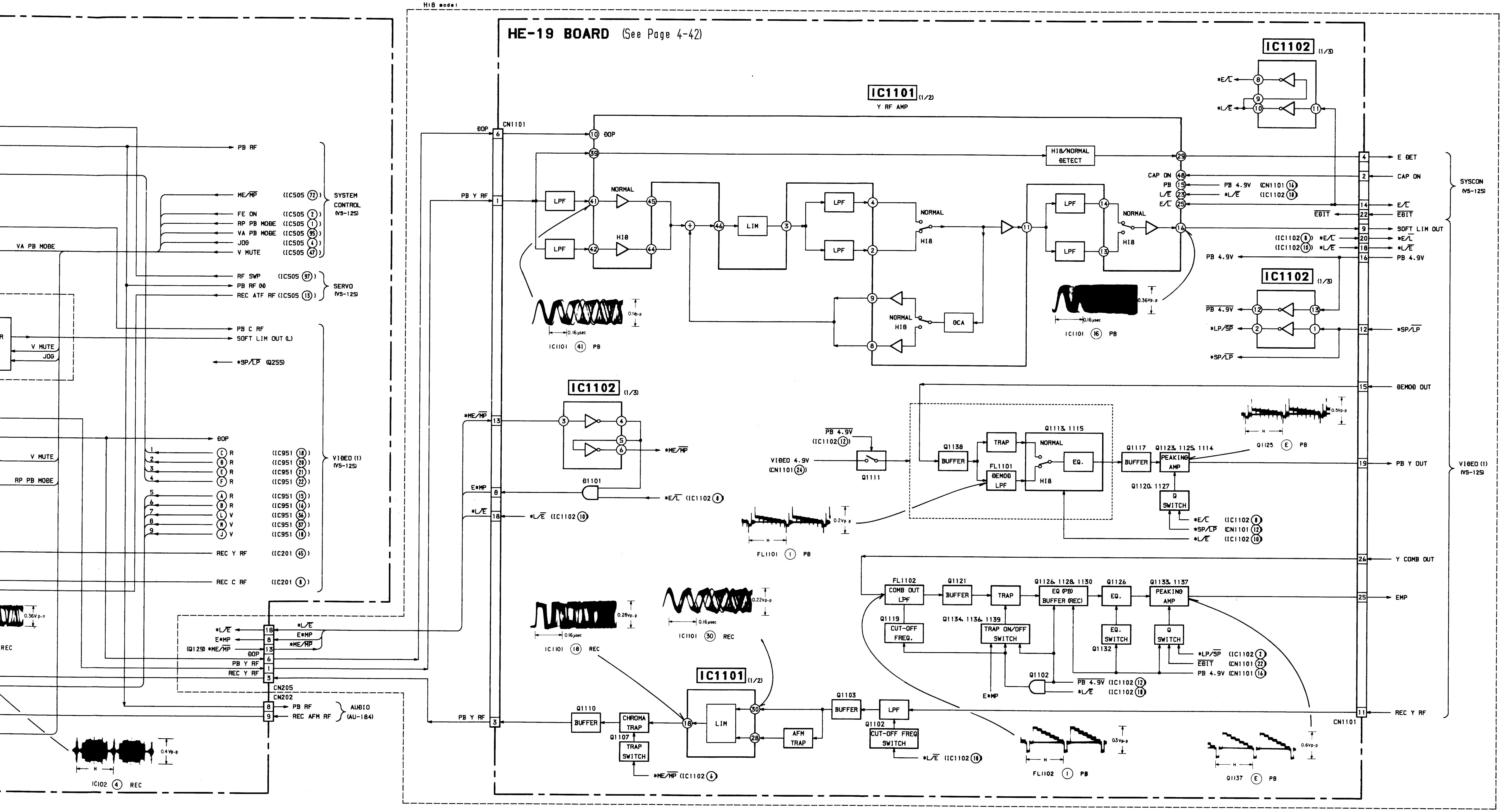

VS-125 BOARD (See Page 4-27, 4-30)
PJ-68 BOARD
H18 model
VIDEO (2) (HE-19 BOARD)
CN205
*SP/LP
PB 4.9V
*L/E
*E/L
PB Y OUT
DEMOD OUT
SOFT LIM OUT
REC Y RF
*SP/LP (Q255)
PB 4.9V (Q228)
L/E
E/L
DOP
REC Y RF
SOFT LIM OUT (L) (Q117)
PB C RF (Q114)
REC C RF
VIDEO (2)
Q254
IC201 (7) PB
IC201 (39) REC
IC201 (10) PB
IC201 (41) PB
IC201 (21) (23) REC
IC201 (21) (23) PB
IC201 (45) PB
IC201 (8) REC
Q221, 223
TIME CONSTANT SWITCH
(IC205 (18)) L/E
(IC205 (20)) E/L
IC205 (1/2)
VCA
PB Y LEVEL ADJ
STANDARD 8 model
Q240, 245, 246, 256, 257
FILTER
Q224
H18/NORMAL SWITCH
(CN205 (20)) E/L
HPF
1H DELAY
IC204
2H DELAY
IC203
Q260
BUFFER
FSC (IC201 (61))
Q248, FL202, Q249
FILTER
IC209
Y/C SEP
Q258, 259
CHROMA ATT
(IC201 (62)) BF
IC201 Y/C PROCESS
CARR CONT
DEV CONT
SMEAR CONT
REC Y
PB Y
DEMOD OUT (PB Y)
FM MOD/DEMOD
CLIP ADJ
WBC
D.O PULSE
EMPH/DEEMPH
YD (1H DELAY Y)
YD ADJ
1H/2H DELAY Y, C
COMB ADJ
COMB
YNR
EQ. TRAP
BF
PB C
REC C
FILTER
ACC
CARR CONV
CNR
BURST/C EMPH/DEEMPH
IREF
VREG
CARR CONV
APC VCO
VXO
ACK ID
FSC
X201 4.43MHz
IC201 (59) REC/PB
IC201 (62) REC/PB
IC201 (30) REC
IC201 (5) REC
IC201 (5) PB
IC201 (14) REC
IC201 (14) PB
IC201 (24) REC/PB
IC201 (36) PB
IC201 (32) PB
DOS/MASK
AGC
EXT Y
LINE Y
DOS
PB/EE Y, PB/EE V
NR
REC/PB Y
HPF
Y COMB OUT (REC/PB Y)
VIDEO 4.9V
MIX
VIDEO OUT
Q204
Q265
SYNC
EXT C
PB/EE C
SHP
VCC
VG1
VIDEO 4.9V
CK
SI
CS
SWP
VTR SCK
DATA TO SLVE
VIDEO CS
V1 SWP (SERVO IC505 (96))
BUS DECODER
EMP
Y COMB OUT
CN205
IC251
IC205
AMP
STANDARD 8 model
Q232, 234, 238, 241, 242, 247, 266
FILTER
C MUTE
IC208
Q214, 217
LOGIC
V MUTE
DS VDD
STANDARD 8 and W/B EVF model
ACK DET
Q216
IC1501
J00 CHROMA PROCESS
CN204
CN1502
Q1506
LPF
PB C IN
C OUT
C SYNC
HD OUT
FSC IN
MODE
VCC
SQ ID
(IC201 (24)) SYNC
(IC201 (61)) FSC
(IC201 (10)) DOP
PB 4.9V
IC1501 (2) PB
IC1501 (11) PB
0.4Vp-p
0.5Vp-p
0.16μsec
0.36Vp-p
0.6Vp-p
0.35Vp-p
0.2Vp-p
4.43MHz
1.5Vp-p
2Vp-p
0.3Vp-p
2.2Vp-p
09



EMP
Y COMB OUT
CN205
IC251 ③ ⑦ PB
IC251 ⑪ PB
IC251 ⑲ PB
IC251 ⑲ REC
TERMINAL BOARD
J201
VIDEO
S VIDEO
VIDEO I/O
Y IN/OUT
C IN/OUT
S IN
CN201
H18 model
STANDARD 8 and W/B EVF model
EXCEPT STANDARD 8 and W/B EVF model
H18 model
Q1259
*IN/OUT
Q1253
LINE Y
CAM Y
DBS1
DBS2
CLAMP
MUTE1
MUTE2
MUTE3
LINE C
CAM C
CAM REC C
PB C
EE PB C
Q1254
Q1257
ATT BUFFER
Q1252
S IN
V IN/OUT
(SYSCON IC509 ⑬)
IC251
INPUT/OUTPUT SWITCH
C SW (Q225)
DBS VOB
DBS VOW
EVF VOW
EVF VOB
C MUTE (Q216, 217)
Q956
BUFFER
COMP REC (SYSCON IC505 ㉕)
IC205
AMP
Q958, 959, 960
MIX FILTER
STANDARD 8 and W/B EVF model
CN206
EVF Y
EVF C
EVF
(VF-65:W/B EVF model)
(VF-72:COLOR EVF model)
IC251 ⑰ ㉕ CAMERA
STANDARD 8 model
Q232, 236, 238, 241, 242, 247, 266
FILTER
IC201 ㉜ PB
STANDARD 8 and W/B EVF model
IC207
Q201, 214
LOGIC
Q253
LOGIC
Q255
LEVEL SHIFT
* SP/LP
CN203
FSC
CAM Y
CAM C
REG H
SYNC
EVF VOW
DS VOW
DS VOB
EVF VOB
CAMERA (VC-161)
SYNC (IC201 ㉔)
D204
COMP REC (IC505 ㉕)
SP/LP (IC505 ㉛)
V MUTE (IC505 ㊼)
JOG (IC505 ④)
CAM/LINE (IC505 ㉖)
VA PB MODE (IC505 ㊵)
JOG VD (IC505 ③)
V IN/OUT (IC505 ㊸)
S IN
SYSTEM CONTROL
Q1259
LEVEL SHIFT
*IN/OUT
IC251 ⑮ ㉙ CAMERA
IC251 ㉑ PB
IC251 ㉑ REC
Q265
C MUTE
IC208
Q216, 217
LOGIC
V MUTE
DS VOB
Q225, 226, 227, 228
LOGIC
COMP REC (SYSCON IC505 ㉕)
VA PB MODE (SYSCON IC505 ㉟)
VIDEO 4.9V
PB 4.9V
Q1251, Q1251
LOGIC
V IN/OUT (SYSCON IC509 ㊸)
EXCEPT STANDARD 8 and W/B EVF model
STANDARD 8 and W/B EVF model
Q216
ACK DET
IC951
CONVERTER
SI
SCK
D/A CS
CS
DATA TO SVAE (IC503 ㉞)
SCK (IC503 ㊲)
CS DA (IC503 ㊲)
SYSTEM CONTROL
Y/C SEP
VIDEO (2)
SWP
SWP (IC505 ㊼)
VI SYNC (IC505 ㊻)
SYNC (IC201 ㉔)
SERVO
PAL JOG HD
Q214, 217
LOGIC
DOP
JOG
V MUTE
IC1501
JOG CHROMA PROCESS
CN204
CN1502
Q1506
LPF
PB C IN
C SYNC
FSC IN
VCC
C OUT
HD OUT
MODE
SQ ID
JOG (IC505 ④)
IC201 ㉔ SYNC
IC201 ㉛ FSC
IC201 ⑩ DOP
PB 4.9V
PJ-68 BOARD (See Page 4-46)
IC1501 ⑮ PB
FCS (IC201 ㊷)
Q219
BUFFER
CN202
1.5M DEV
AUDIO FADER
AU FSC
1.7M DEV
MX ADJ
AUDIO (AU-184)
0.3Vp-p
0.5Vp-p
1Vp-p
0.4Vp-p
0.25Vp-p
2Vp-p
H

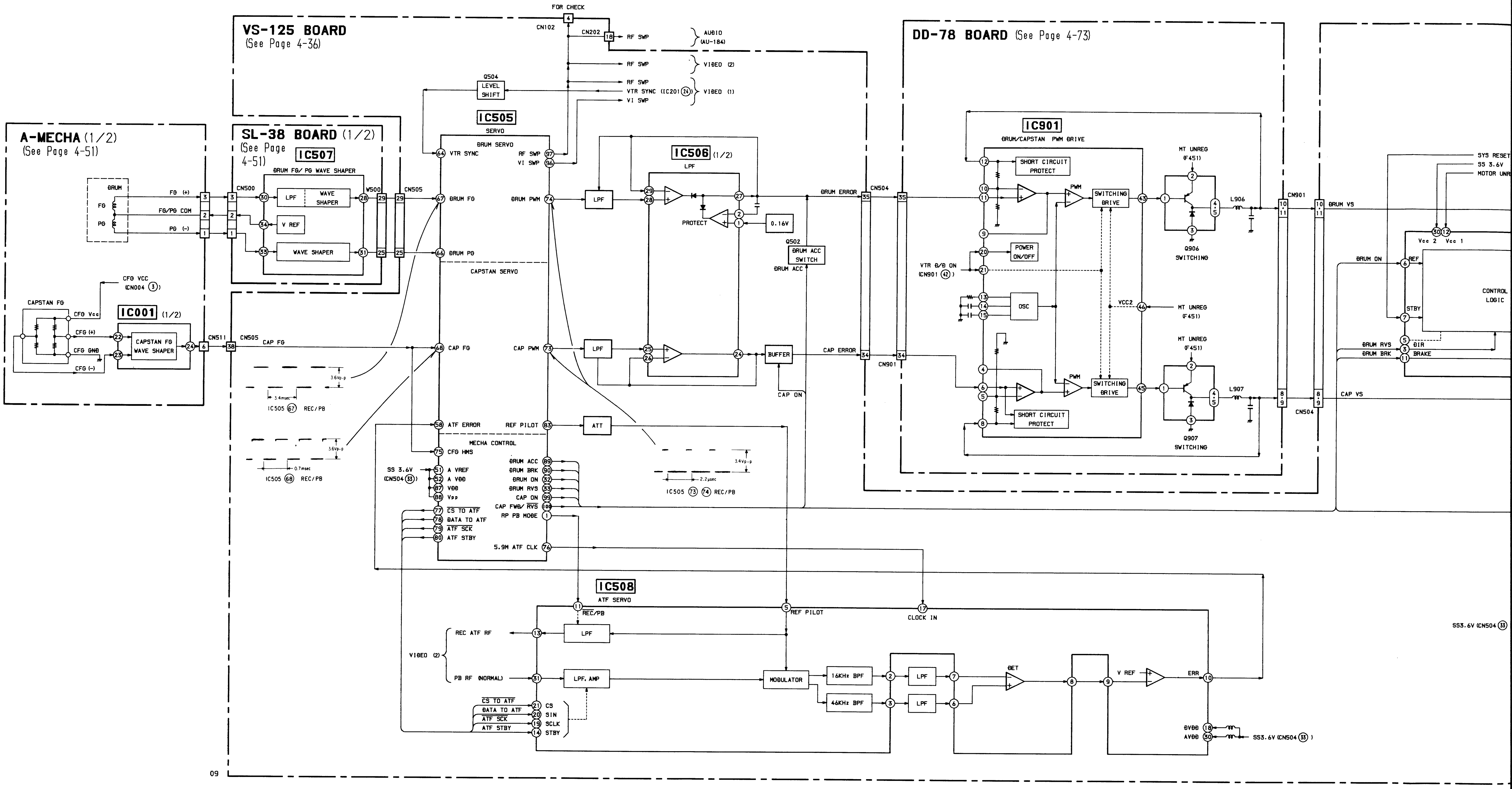
3-4. VIDEO (2) BLOCK DIAGRAM

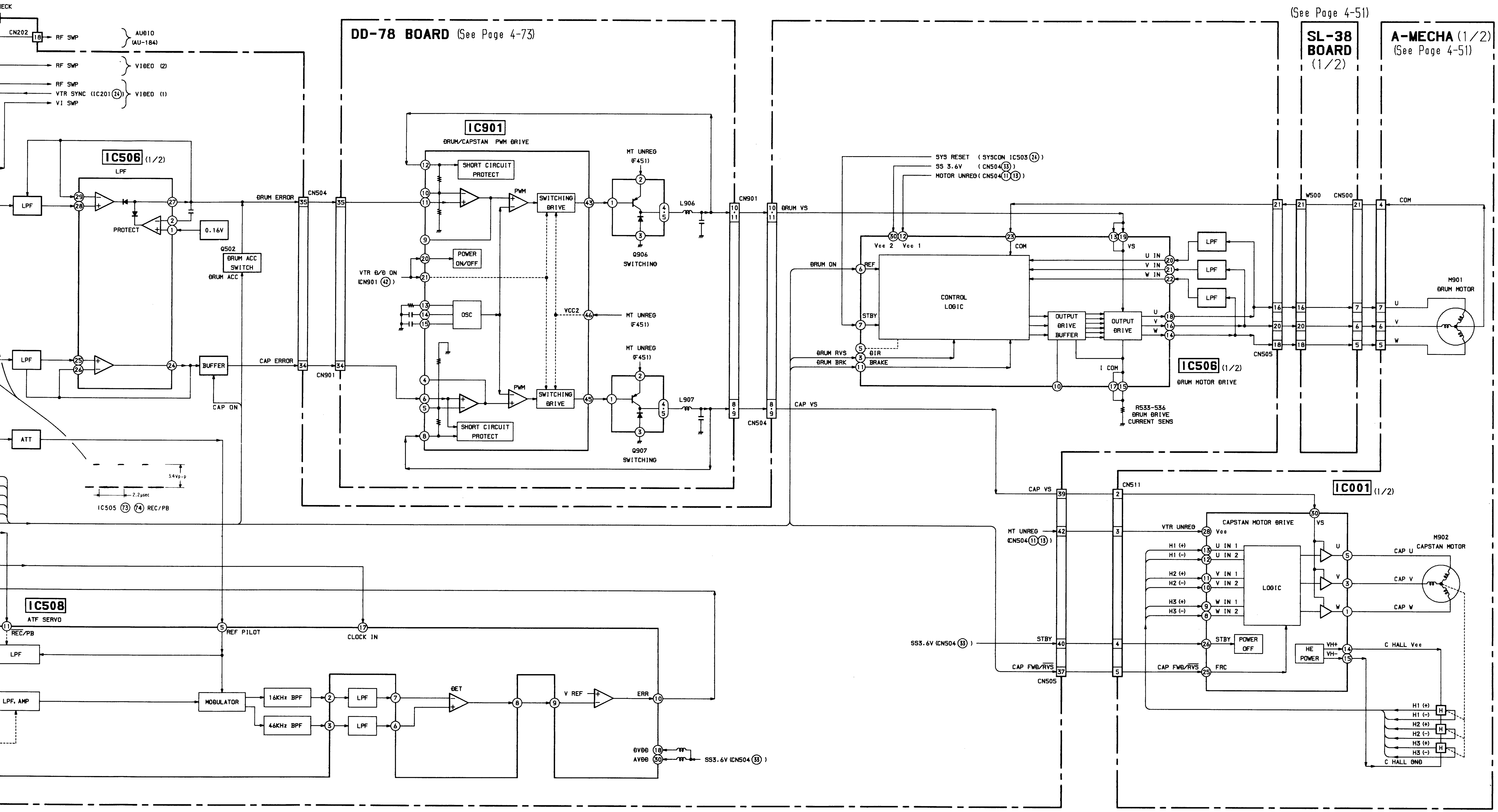

VS-125 BOARD
(See Page 4-27)
H18 model
Q116, 118, 121, 124, 125, 130, 131, 136
FILTER
*L/E (CN205⑱)
(Q255) *SP/LP
E*MP (CN205⑧)
CN102
FOR CHECK
PB PCM RF
PB RF
RF SWP
REC 2
IC102
REC/PB AMP
RF SWP
MT 1CH 1
MT 2CH 2
MT Q 3
MT FO 4
VIDEO HEAD CH1
1CH A 00
VIDEO HEAD CH1
2CH A 00
FLYING ERASE
FE 00
CN101
PB AMP
FILTER
Q109, 114, 132, 133
STANDARD 8 model
0.4Vp-p
0.16µsec
IC102 ⑧ ⑭ PB
AGC
Q105
MUTE SW
V MUTE
RP PB MODE
Q135
RP PB MODE
4Vp-p
0.16µsec
IC102 ㉗ ㉞ REC
REC AMP
SW
MIX AMP
VCC
VCC 1CH
VCC 2CH
RP 5V
1CH CONT
2CH CONT
Q134
RP PB MODE
REC Y
REC LOW
REC C
Q126
BUFFER
Q101-104
ERASE OSC
FE ON
*ME/MP
09
VA PB MODE
STANDARD 8 model
Q111, 112, 217,
Q227, 228, D101
FILTER
V MUTE
JOG
STANDARD 8 model
Q113, 115, 119
FILTER
0.36V p-p
0.16µsec
IC102 ⑥ REC
0.4 Vp-p
H
IC102 ④ REC
PB RF
ME/MP
FE ON
RP PB MO
VA PB MO
JOG
V MUTE
RF SWP
PB RF (N)
REC ATF
PB C RF
SOFT LIM
*SP/LP
DOP
Ⓒ R
Ⓓ R
Ⓔ R
Ⓕ R
Ⓐ R
Ⓑ R
Ⓛ V
Ⓜ V
Ⓙ V
REC Y RF
REC C RF
*L/E
E*MP
(Q129) *ME/MP
DOP
PB Y RF
REC Y RF



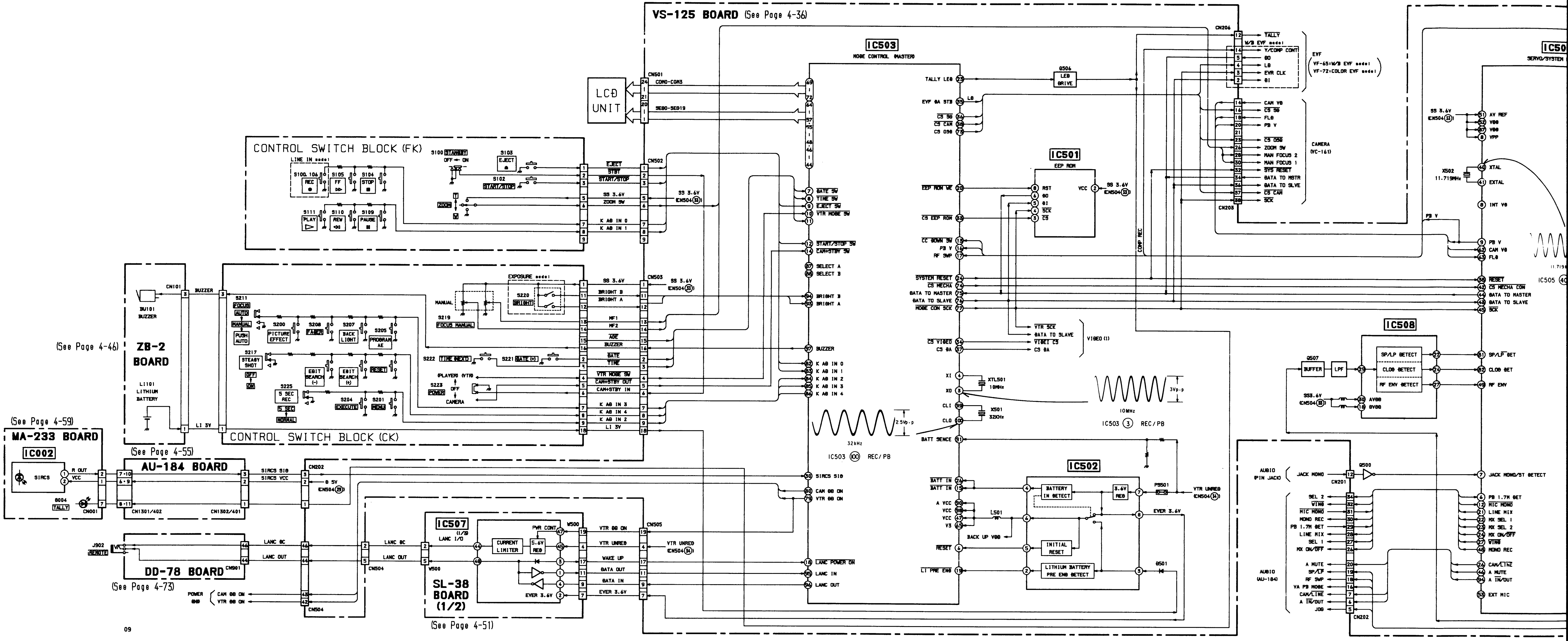
Hi8 model
HE-19 BOARD (See Page 4-42)
IC1101 (1/2) Y RF AMP
IC1102 (1/3)
IC1101 (1/2)
CN1101
BOP
PB Y RF
*ME/MP
E*MP
*L/E
PB RF
ME/MP (IC505 72)
FE ON (IC505 2)
RP PB MODE (IC505 1)
VA PB MODE (IC505 95)
JOG (IC505 4)
V MUTE (IC505 47)
SYSTEM CONTROL (VS-125)
RF SWP (IC505 97)
PB RF 00
REC ATF RF (IC505 13)
SERVO (VS-125)
PB C RF
SOFT LIM OUT L
*SP/LP (Q255)
VA PB MODE
V MUTE
JOG
RP PB MODE
C R (IC951 18)
B R (IC951 20)
E R (IC951 21)
F R (IC951 22)
A R (IC951 15)
B R (IC951 16)
L V (IC951 36)
M V (IC951 37)
J V (IC951 10)
REC Y RF (IC201 45)
REC C RF (IC201 8)
VIDEO (1) (VS-125)
0.36V p-p
REC
(Q125) *ME/MP
CN205
CN202
PB RF
REC AFM RF
AUDIO (AU-184)
0.4Vp-p
IC102 4 REC
LPF
NORMAL
Hi8
LIM
HI8/NORMAL DETECT
GCA
CAP ON
PB 4.9V (CN1101 16)
*L/E (IC1102 10)
E/C
EDIT
E DET
SOFT LIM OUT
*E/C
PB 4.9V
*LP/SP
*SP/LP
SYSCON (VS-125)
0.1Vp-p
0.16µsec
IC1101 41 PB
0.36Vp-p
IC1101 16 PB
Q1101
*E/C (IC1102 8)
*L/E (IC1102 10)
DEMOD OUT
PB 4.9V (IC1102 12)
VIDEO 4.9V (CN1101 24)
Q1111
Q1138 BUFFER
TRAP
FL1101 DEMOD LPF
Q1113, 1115
EQ.
Q1117 BUFFER
Q1123, 1125, 1114 PEAKING AMP
Q1120, 1127 Q SWITCH
*E/C (IC1102 8)
*SP/LP (CN1101 12)
*L/E (IC1102 10)
0.2Vp-p
FL1101 1 PB
0.5Vp-p
Q1125 E PB
PB Y OUT
VIDEO (1) (VS-125)
Y COMB OUT
FL1102 COMB OUT LPF
Q1121 BUFFER
Q1126, 1128, 1130 EQ (PB) BUFFER (REC)
Q1126 EQ.
Q1133, 1137 PEAKING AMP
Q1119 CUT-OFF FREQ.
Q1134, 1136, 1139 TRAP ON/OFF SWITCH
EQ. SWITCH Q1132
Q SWITCH
*LP/SP (IC1102 2)
EDIT (CN1101 22)
PB 4.9V (CN1101 16)
Q1102
PB 4.9V (IC1102 12)
*L/E (IC1102 10)
E*MP
EMP
REC Y RF
0.28Vp-p
IC1101 18 REC
0.22Vp-p
IC1101 30 REC
Q1110 BUFFER
CHROMA TRAP
Q1107 TRAP SWITCH
*ME/MP (IC1102 6)
AFM TRAP
Q1103 BUFFER
Q1102 CUT-OFF FREQ SWITCH
*L/E (IC1102 10)
0.3Vp-p
FL1102 1 PB
0.6Vp-p
Q1137 E PB

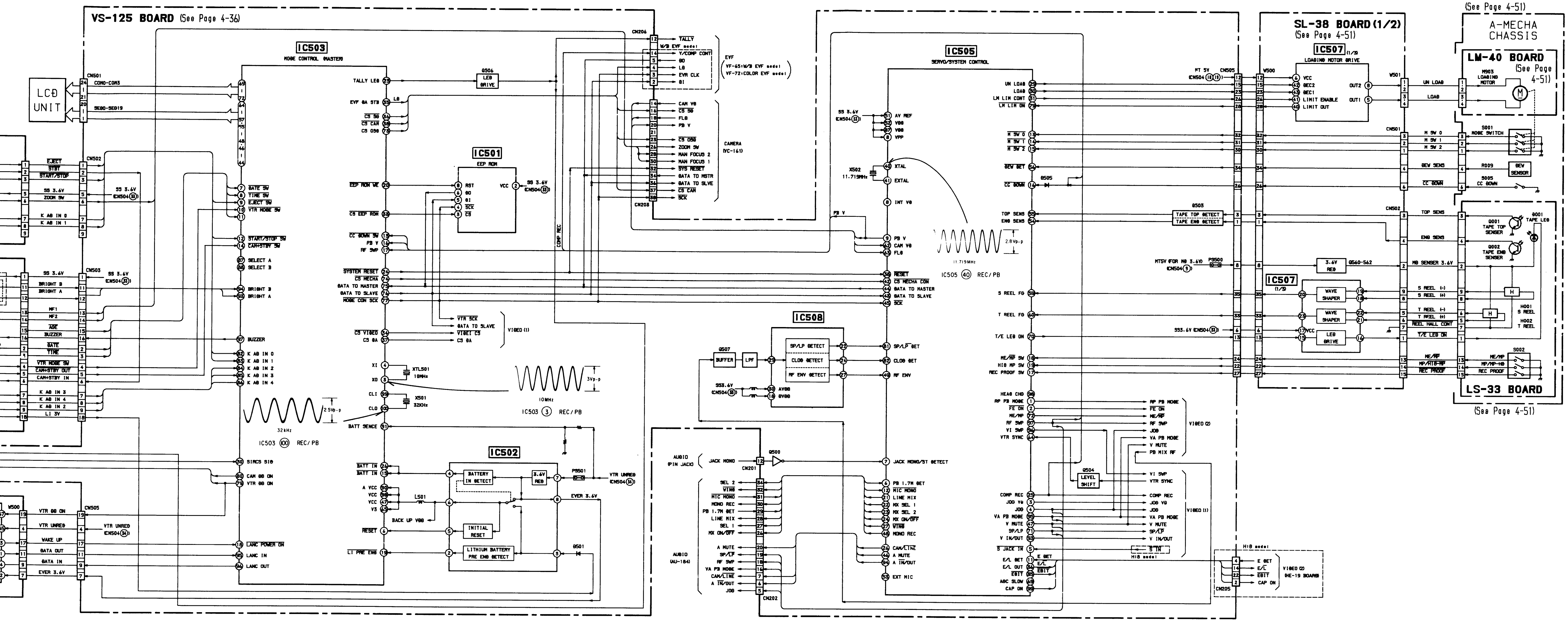
3-5. SERVO BLOCK DIAGRAM


FOR CHECK
CN102
CN202
RF SWP
AUDIO (AU-184)
VS-125 BOARD
(See Page 4-36)
RF SWP
VIDEO (2)
Q504
LEVEL SHIFT
RF SWP
VTR SYNC (IC201 ㉔)
VIDEO (1)
VI SWP
IC505
SERVO
DRUM SERVO
VTR SYNC
RF SWP
VI SWP
DRUM FG
DRUM PWM
DRUM PG
CAPSTAN SERVO
CAP FG
CAP PWM
ATF ERROR
REF PILOT
MECHA CONTROL
CFG HMS
SS 3.6V (CN504 ㉝)
A VREF
A VDD
VDD
Vpp
CS TO ATF
DATA TO ATF
ATF SCK
ATF STBY
DRUM ACC
DRUM BRK
DRUM ON
DRUM RVS
CAP ON
CAP FWD/RVS
RP PB MODE
5.9M ATF CLK
A-MECHA (1/2)
(See Page 4-51)
DRUM
FG
PG
FG (+)
FG/PG COM
PG (-)
CFG VCC (CN004 ③)
CAPSTAN FG
CFG Vcc
CFG (+)
CFG GND
CFG (-)
IC001 (1/2)
CAPSTAN FG WAVE SHAPER
CN511
CN505
CAP FG
SL-38 BOARD (1/2)
(See Page 4-51)
IC507
DRUM FG/PG WAVE SHAPER
CN500
LPF
WAVE SHAPER
V REF
WAVE SHAPER
W500
CN505
3.6Vp-p
3.4msec
IC505 ㊲ REC/PB
3.6Vp-p
0.7msec
IC505 ㊳ REC/PB
IC506 (1/2)
LPF
LPF
PROTECT
0.16V
LPF
BUFFER
ATT
3.4Vp-p
2.2μsec
IC505 ㊸ ㊹ REC/PB
DRUM ERROR
CN504
Q502
DRUM ACC SWITCH
DRUM ACC
CAP ERROR
CAP ON
CN901
DD-78 BOARD (See Page 4-73)
IC901
DRUM/CAPSTAN PWM DRIVE
SHORT CIRCUIT PROTECT
PWM
SWITCHING DRIVE
POWER ON/OFF
VTR D/D ON (CN901 ㊷)
OSC
VCC2
MT UNREG (F451)
Q906 SWITCHING
L906
MT UNREG (F451)
MT UNREG (F451)
PWM
SWITCHING DRIVE
SHORT CIRCUIT PROTECT
Q907 SWITCHING
L907
CN901
CN504
DRUM VS
CAP VS
SYS RESET
SS 3.6V
MOTOR UNR
Vcc 2
Vcc 1
DRUM ON
REF
CONTROL LOGIC
STBY
DRUM RVS
DRUM BRK
DIR
BRAKE
SS3.6V (CN504 ㉝)
IC508
ATF SERVO
REC/PB
REF PILOT
CLOCK IN
REC ATF RF
VIDEO (2)
PB RF (NORMAL)
LPF
LPF, AMP
MODULATOR
16KHz BPF
46KHz BPF
LPF
LPF
DET
V REF
ERR
CS TO ATF
DATA TO ATF
ATF SCK
ATF STBY
CS
SIN
SCLK
STBY
DVDD
AVDD
SS3.6V (CN504 ㉝)
09

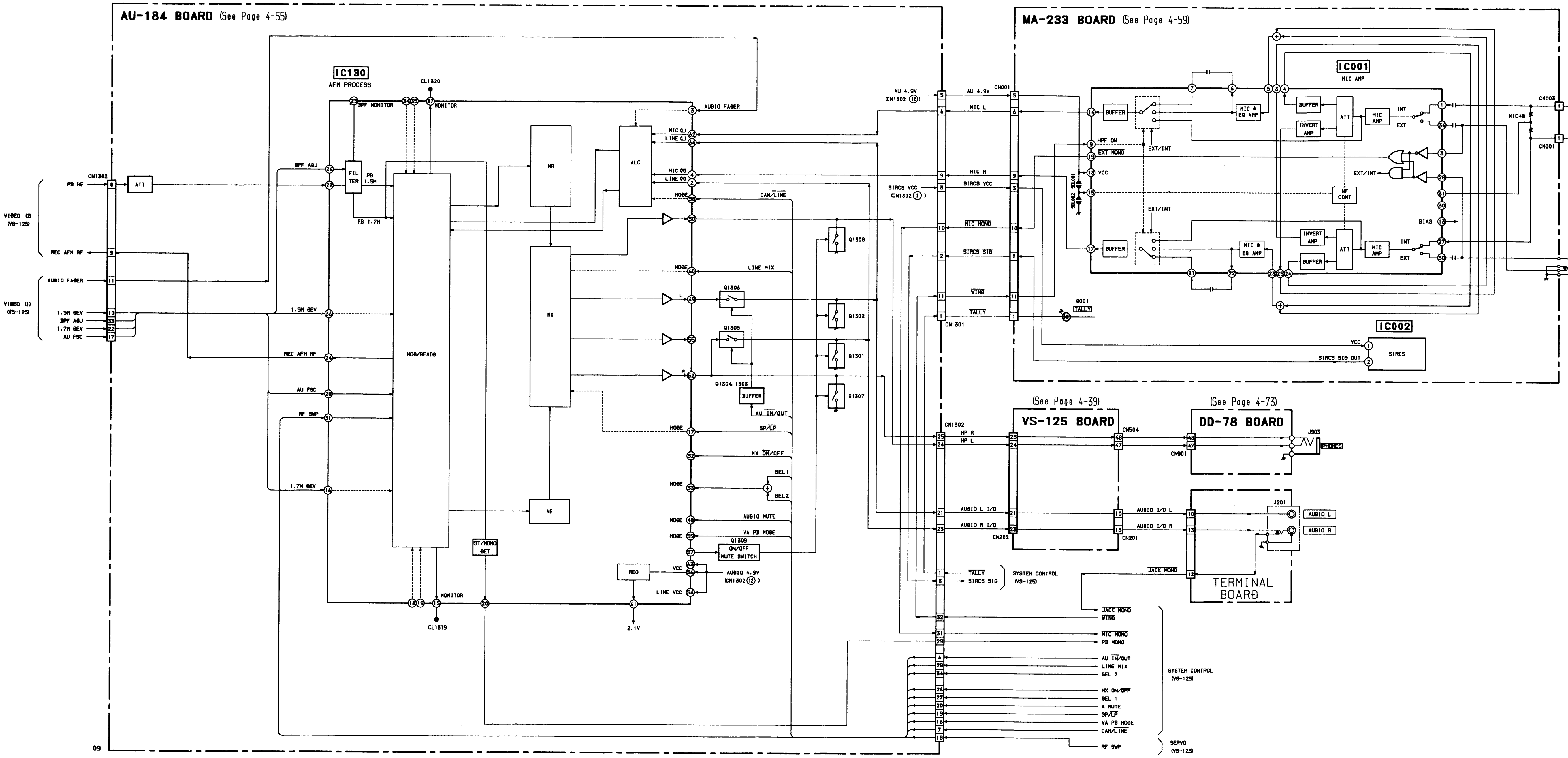

DD-78 BOARD (See Page 4-73)
(See Page 4-51)
SL-38 BOARD (1/2)
A-MECHA (1/2) (See Page 4-51)
CN202
RF SWP
AUDIO (AU-184)
VIDEO (2)
VTR SYNC (IC201 ㉔)
VI SWP
VIDEO (1)
IC506 (1/2)
LPF
PROTECT
0.16V
Q502
DRUM ACC SWITCH
DRUM ACC
DRUM ERROR
CAP ERROR
BUFFER
CAP ON
CN504
CN901
ATT
3.4Vp-p
2.2μsec
IC505 ㉝ ㉞ REC/PB
IC901
DRUM/CAPSTAN PWM DRIVE
SHORT CIRCUIT PROTECT
PWM
SWITCHING DRIVE
POWER ON/OFF
VTR D/D ON (CN901 ㊷)
OSC
VCC2
MT UNREG (F451)
L906
L907
Q906 SWITCHING
Q907 SWITCHING
DRUM VS
CAP VS
SYS RESET (SYSCON IC503 ㉔)
SS 3.6V (CN504 ㉝)
MOTOR UNREG (CN504 ⑪ ⑬)
Vcc 2
Vcc 1
COM
VS
REF
DRUM ON
STBY
CONTROL LOGIC
U IN
V IN
W IN
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
DRUM RVS
DRUM BRK
DIR
BRAKE
I COM
IC506 (1/2)
DRUM MOTOR DRIVE
R533-536 DRUM DRIVE CURRENT SENS
W500
CN500
CN505
M901 DRUM MOTOR
U
V
W
IC508
ATF SERVO
REC/PB
REF PILOT
CLOCK IN
LPF, AMP
MODULATOR
16KHz BPF
46KHz BPF
DET
V REF
ERR
DVDD
AVDD
SS3.6V (CN504 ㉝)
CN511
IC001 (1/2)
CAPSTAN MOTOR DRIVE
VTR UNREG
Vcc
MT UNREG (CN504 ⑪ ⑬)
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
U IN 1
U IN 2
V IN 1
V IN 2
W IN 1
W IN 2
LOGIC
STBY
POWER OFF
CAP FWD/RVS
FRC
HE POWER
VH+
VH-
C HALL Vcc
C HALL GND
M902 CAPSTAN MOTOR
CAP U
CAP V
CAP W

3-6. SYSTEM CONTROL BLOCK DIAGRAM

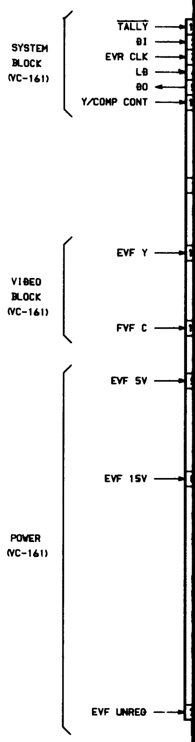

VS-125 BOARD (See Page 4-36)
LCD UNIT
CN501
COM0-COM3
SEG0-SEG19
IC503
MODE CONTROL (MASTER)
CONTROL SWITCH BLOCK (FK)
LINE IN model
S100, 106 REC
S105 FF
S104 STOP
S111 PLAY
S110 REW
S109 PAUSE
S100 STANDBY OFF ← ON
S103 EJECT
S102 START/STOP
ZOOM T W
EJECT
STBY
START/STOP
SS 3.6V
ZOOM SW
K AD IN 0
K AD IN 1
CN502
SS 3.6V (CN504 (33))
DATE SW
TIME SW
EJECT SW
VTR MODE SW
START/STOP SW
CAM+STBY SW
SELECT A
SELECT B
BRIGHT B
BRIGHT A
BUZZER
K AD IN 0
K AD IN 1
K AD IN 2
K AD IN 3
K AD IN 4
(See Page 4-46)
ZB-2 BOARD
CN101
BU101 BUZZER
LI101 LITHIUM BATTERY
LI 3V
CONTROL SWITCH BLOCK (CK)
S211 FOCUS AUTO MANUAL PUSH AUTO
S200 PICTURE EFFECT
S208 FADER
S207 BACK LIGHT
S205 PROGRAM AE
S217 STEADY SHOT OFF ON
EDIT SEARCH (-)
EDIT SEARCH (+)
RESET
S225 5 SEC REC 5 SEC NORMAL
S204 EXECUTE
S201 MENU
EXPOSURE model
S220 BRIGHT
MANUAL
S219 FOCUS MANUAL
S222 TIME (NEXT)
S221 DATE (+)
S223 POWER (PLAYER) (VTR) OFF CAMERA
CN503
SS 3.6V
BRIGHT B
BRIGHT A
MF1
MF2
ADE
BUZZER
DATE
TIME
VTR MODE SW
CAM+STBY OUT
CAM+STBY IN
K AD IN 3
K AD IN 4
K AD IN 2
LI 3V
(See Page 4-59)
MA-233 BOARD
IC002
SIRCS
R OUT
VCC
D004 TALLY
CN001
(See Page 4-55)
AU-184 BOARD
CN1301/402
CN1302/401
SIRCS SIG
SIRCS VCC
CN202
D 5V (CN504 (29))
J902 REMOTE
DD-78 BOARD
CN901
(See Page 4-73)
LANC DC
LANC OUT
POWER DD
CAM DD ON
VTR DD ON
CN504
IC507 (1/3)
LANC I/O
CURRENT LIMITER
5.6V REG
PWR CONT
W500
SL-38 BOARD (1/2)
(See Page 4-51)
EVER 3.6V
VTR DD ON
VTR UNREG
WAKE UP
DATA OUT
DATA IN
CN505
VTR UNREG (CN504 (34))
SIRCS SIG
CAM DD ON
VTR DD ON
LANC POWER ON
LANC IN
LANC OUT
09
TALLY LED
EVF DA STB
LD
CS SG
CS CAM
CS OSD
Q506 LED DRIVE
EEP ROM WE
CS EEP ROM
IC501
EEP ROM
RST
DO
DI
SCK
CS
VCC
SS 3.6V (CN504 (33))
CC DOWN SW
PB V
RF SWP
SYSTEM RESET
CS MECHA
DATA TO MASTER
DATA TO SLAVE
MODE CON SCK
COMP REC
VTR SCK
DATA TO SLAVE
VIDEI CS
CS DA
VIDEO (1)
CS VIDEO
CS DA
XI
XO
XTL501 10MHz
3Vp-p
10MHz
IC503 (3) REC/PB
CLI
CLO
X501 32KHz
2.5Vp-p
32kHz
IC503 (100) REC/PB
BATT SENCE
IC502
BATT IN
BATT IN
A VCC
VCC
VCC
V3
L501
BACK UP VDD
RESET
LI PRE END
BATTERY IN DETECT
3.6V REG
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
PS501
VTR UNREG (CN504 (34))
EVER 3.6V
D501
CN206
TALLY
W/B EVF model
Y/COMP CONT
DO
LD
EVR CLK
DI
EVF (VF-65: W/B EVF model) (VF-72: COLOR EVF model)
CAM VD
CS SG
FLD
PB V
CS OSD
ZOOM SW
MAN FOCUS 2
MAN FOCUS 1
SYS RESET
DATA TO MSTR
DATA TO SLVE
CS CAM
SCK
CN203
CAMERA (VC-161)
IC50
SERVO/SYSTEM
SS 3.6V (CN504 (33))
AV REF
VDD
VDD
VPP
X502 11.719MHz
XTAL
EXTAL
INT VD
PB V
CAM VD
FLD
11.719
IC505 (40
RESET
CS MECHA CON
DATA TO MASTER
DATA TO SLAVE
SCK
IC508
Q507 BUFFER
LPF
SP/LP DETECT
CLOG DETECT
RF ENV DETECT
SS3.6V (CN504 (33))
AVDD
DVDD
SP/LP DET
CLOG DET
RF ENV
AUDIO (PIN JACK)
JACK MONO
CN201
Q500
JACK MONO/ST DETECT
SEL 2
WIND
MIC MONO
MONO REC
PB 1.7M DET
LINE MIX
SEL 1
MX ON/OFF
A MUTE
SP/LP
RF SWP
VA PB MODE
CAM/LINE
A IN/OUT
JOG
AUDIO (AU-184)
CN202
PB 1.7M DET
MIC MONO
LINE MIX
MX SEL 1
MX SEL 2
MX ON/OFF
WIND
MONO REC
CAM/LINE
A MUTE
A IN/OUT
EXT MIC


VS-125 BOARD (See Page 4-36)
IC503
MODE CONTROL (MASTER)
IC501
EEP ROM
IC502
IC505
SERVO/SYSTEM CONTROL
IC508
SP/LP DETECT
CLOG DETECT
RF ENV DETECT
LCD UNIT
CN501
CN502
CN503
CN505
CN201
CN202
CN203
CN205
CN206
W500
W501
D506
LED DRIVE
EVF
VF-65(W/B EVF model)
VF-72(COLOR EVF model)
CAMERA
(VC-161)
VIDEO (1)
VIDEO (2)
AUDIO
(PIN JACK)
AUDIO
(AU-184)
X502
11.719MHz
XTL501
10MHz
X501
32KHz
IC503 (100) REC/PB
IC503 (3) REC/PB
IC505 (40) REC/PB
2.5Vp-p
3Vp-p
2.8Vp-p
32kHz
10MHz
11.719MHz
BATTERY IN DETECT
3.6V REG
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
Q507
BUFFER
LPF
Q500
Q504
LEVEL SHIFT
Q503
TAPE TOP DETECT
TAPE END DETECT
Hi8 model
VIDEO (2)
(HE-19 BOARD)
SL-38 BOARD (1/2)
(See Page 4-51)
IC507 (1/3)
LOADING MOTOR DRIVE
IC507 (1/3)
WAVE SHAPER
LED DRIVE
3.6V REG
Q560-562
(See Page 4-51)
A-MECHA CHASSIS
LM-40 BOARD
(See Page 4-51)
M903
LOADING MOTOR
S001
MODE SWITCH
R009
DEW SENSOR
S005
CC DOWN
Q001
TAPE TOP SENSOR
D001
TAPE LED
Q002
TAPE END SENSOR
H001
S REEL
H002
T REEL
S002
LS-33 BOARD
(See Page 4-51)

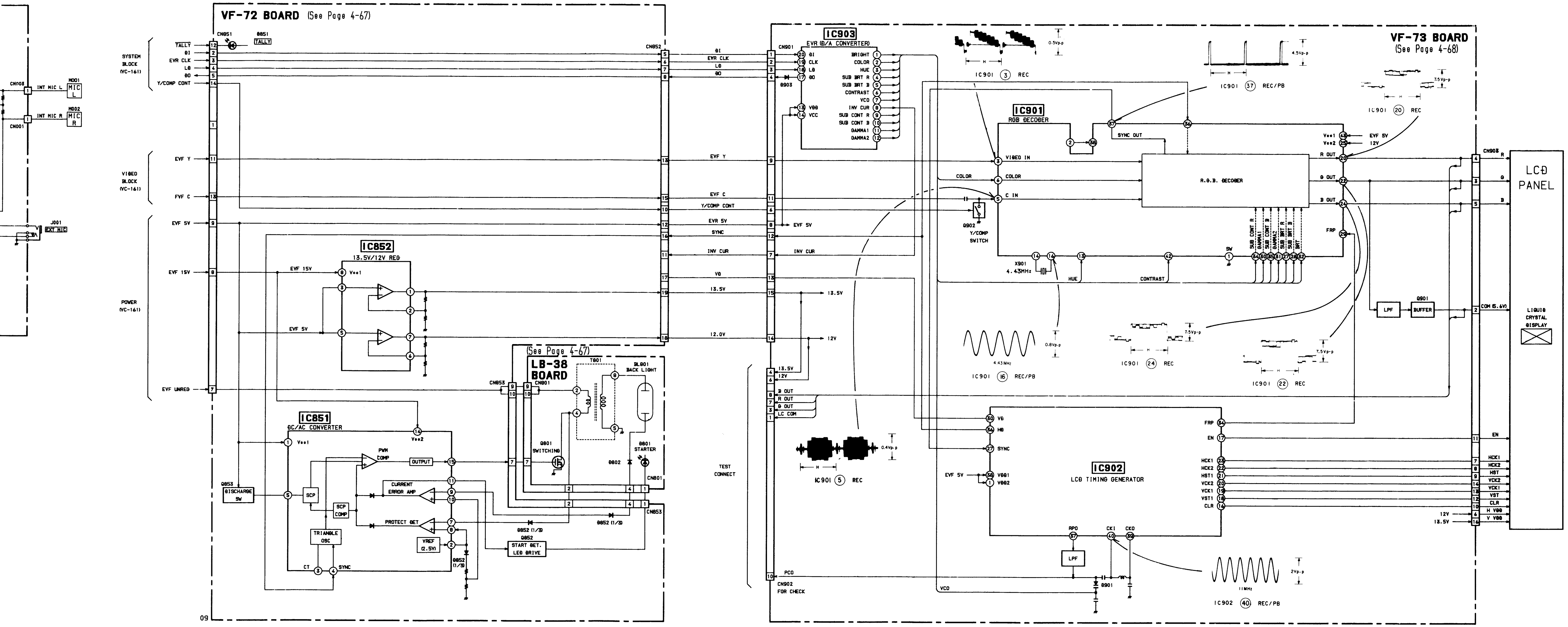
3-7. AUDIO BLOCK DIAGRAM


AU-184 BOARD (See Page 4-55)
IC130
AFM PROCESS
CL1320
BPF MONITOR
MONITOR
AUDIO FADER
MIC (L)
LINE (L)
MIC (R)
LINE (R)
MODE
CAM/LINE
ALC
NR
MX
NR
MOD/DEMOD
FIL TER
PB 1.5M
PB 1.7M
BPF ADJ
CN1302
PB RF
ATT
VIDEO (2) (VS-125)
REC AFM RF
AUDIO FADER
VIDEO (1) (VS-125)
1.5M DEV
BPF ADJ
1.7M DEV
AU FSC
REC AFM RF
AU FSC
RF SWP
LINE MIX
Q1306
Q1305
Q1304, 1303
BUFFER
AU IN/OUT
SP/LP
MX ON/OFF
SEL1
SEL2
AUDIO MUTE
VA PB MODE
Q1309
ON/OFF MUTE SWITCH
Q1308
Q1302
Q1301
Q1307
ST/MONO DET
REG
VCC
LINE VCC
AUDIO 4.9V (CN1302 ⑫)
MONITOR
CL1319
2.1V
09
MA-233 BOARD (See Page 4-59)
AU 4.9V (CN1302 ⑫)
CN001
AU 4.9V
MIC L
MIC R
SIRCS VCC
SIRCS VCC (CN1302 ②)
MIC MONO
SIRCS SIG
WIND
TALLY
CN1301
IC001
MIC AMP
BUFFER
MIC & EQ AMP
ATT
MIC AMP
INVERT AMP
INT
EXT
HPF ON
EXT MONO
EXT/INT
VCC
NF CONT
BIAS
CN003
INT MIC L
M001 MIC L
M002 MIC R
INT MIC R
MIC+B
CN001
J001 EXT MIC
D001 TALLY
IC002
SIRCS
SIRCS SIG OUT
(See Page 4-39)
VS-125 BOARD
CN1302
HP R
HP L
CN504
(See Page 4-73)
DD-78 BOARD
J903
PHONES
CN901
J201
AUDIO L
AUDIO R
AUDIO L I/O
AUDIO R I/O
CN202
CN201
JACK MONO
TERMINAL BOARD
TALLY
SIRCS SIG
SYSTEM CONTROL (VS-125)
JACK MONO
WIND
MIC MONO
PB MONO
AU IN/OUT
LINE MIX
SEL 2
MX ON/OFF
SEL 1
A MUTE
SP/LP
VA PB MODE
CAM/LINE
SYSTEM CONTROL (VS-125)
RF SWP
SERVO (VS-125)

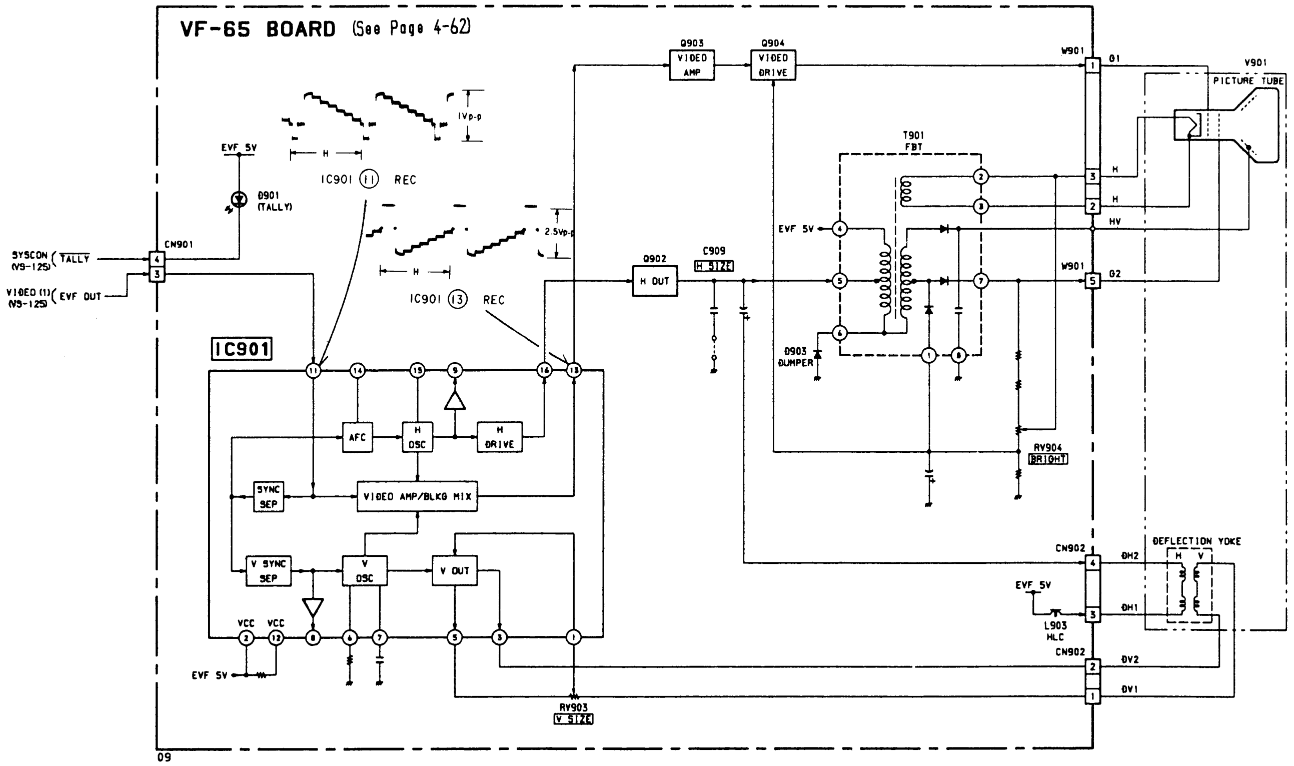
3-8. COLOR


SYSTEM BLOCK (VC-161)
TALLY
DI
EVR CLK
LD
DO
Y/COMP CONT
VIDEO BLOCK (VC-161)
EVF Y
EVF C
EVF 5V
EVF 15V
POWER (VC-161)
EVF UNREG
09

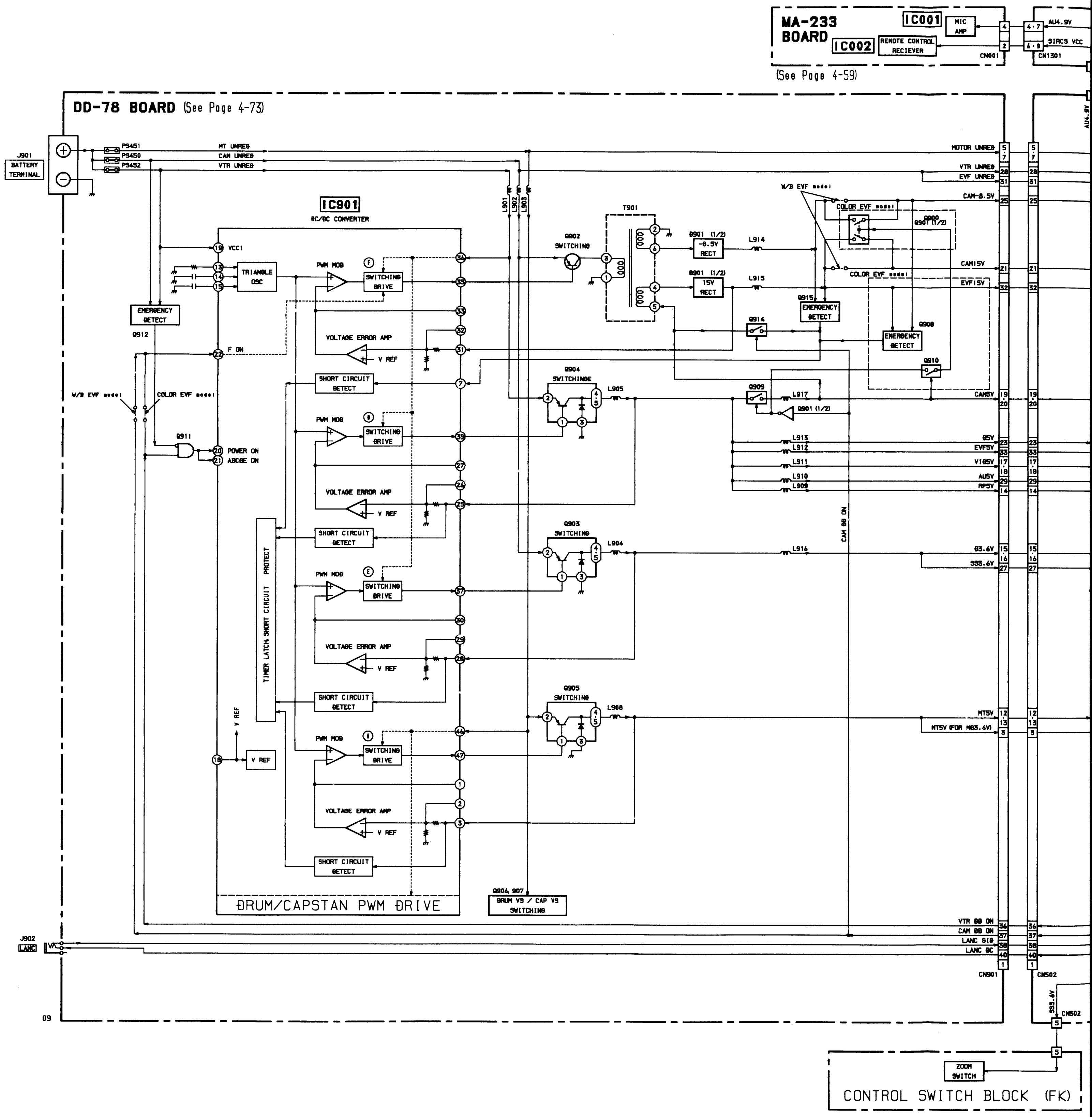
3-8. COLOR EVF BLOCK DIAGRAM

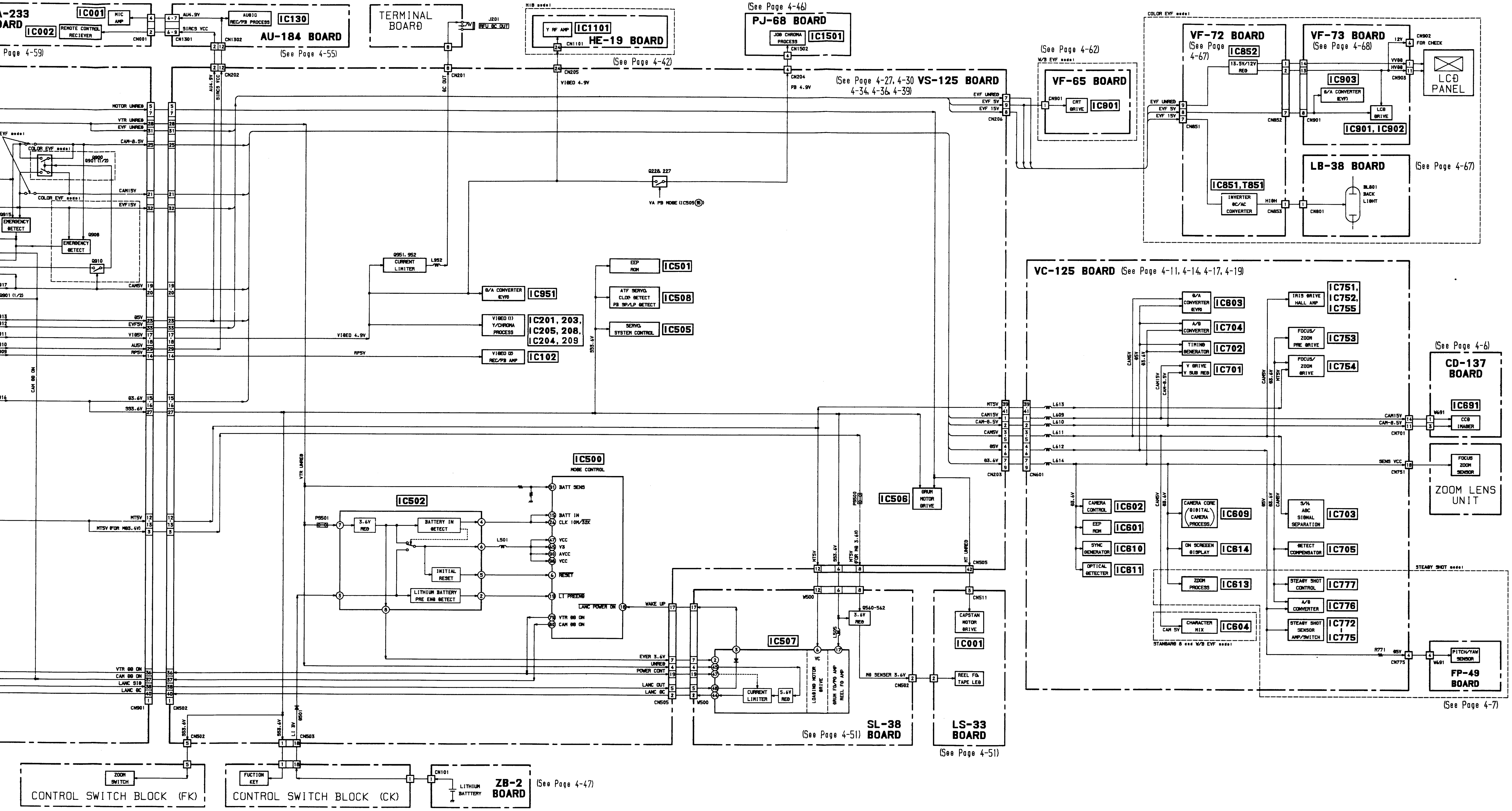

VF-72 BOARD (See Page 4-67)
VF-73 BOARD (See Page 4-68)
LB-38 BOARD (See Page 4-67)
SYSTEM BLOCK (VC-161)
VIDEO BLOCK (VC-161)
POWER (VC-161)
TALLY
DI
EVR CLK
LD
DO
Y/COMP CONT
EVF Y
EVF C
EVF 5V
EVF 15V
EVF UNREG
CN851
D851 TALLY
CN852
CN853
CN801
CN901
CN902
CN903
CN902 FOR CHECK
TEST CONNECT
IC852 13.5V/12V REG
IC851 DC/AC CONVERTER
PWM COMP
OUTPUT
CURRENT ERROR AMP
PROTECT DET
SCP
SCP COMP
TRIANGLE OSC
VREF (2.5V)
START DET. LED DRIVE
DISCHARGE SW
Q853
Q801 SWITCHING
T801
BL801 BACK LIGHT
D801 STARTER
D802
D852 (1/3)
D852 (2/3)
D852 (1/3)
13.5V
12.0V
12V
INV CUR
SYNC
EVR 5V
VD
IC903 EVR (D/A CONVERTER)
BRIGHT
COLOR
HUE
SUB BRT R
SUB BRT B
CONTRAST
VCO
INV CUR
SUB CONT R
SUB CONT B
GAMMA1
GAMMA2
VDD
VCC
D903
IC901 RGB DECODER
R.G.B. DECODER
VIDEO IN
COLOR
C IN
SYNC OUT
R OUT
G OUT
B OUT
FRP
Vcc1
Vcc2
EVF 5V
12V
Q902 Y/COMP SWITCH
X901 4.43MHz
HUE
CONTRAST
SW
SUB CONT R
GAMMA1
SUB CONT B
GAMMA2
SUB BRT R
SUB BRT B
BRT
LPF
Q901 BUFFER
COM (5.6V)
IC902 LCD TIMING GENERATOR
VD
HD
SYNC
VDD1
VDD2
FRP
EN
HCK1
HCK2
HST1
VCK2
VCK1
VST1
CLR
RPO
CK1
CKO
PCO
VCO
D901
B OUT
R OUT
G OUT
LC COM
LCD PANEL
LIQUID CRYSTAL DISPLAY
R
G
B
EN
HCK1
HCK2
HST
VCK2
VCK1
VST
CLR
H VDD
V VDD
IC901 ③ REC
IC901 ㊲ REC/PB
IC901 ⑳ REC
IC901 ⑯ REC/PB
IC901 ㉔ REC
IC901 ㉒ REC
IC901 ⑤ REC
IC902 ㊵ REC/PB
0.5Vp-p
4.5Vp-p
7.5Vp-p
0.8Vp-p
0.4Vp-p
2Vp-p
4.43MHz
11MHz
H
09

3-9. W/B EVF BLOCK DIAGRAM


VF-65 BOARD (See Page 4-62)
IC901
Q903 VIDEO AMP
Q904 VIDEO DRIVE
T901 FBT
V901 PICTURE TUBE
Q902 H OUT
C909 H SIZE
Q903 DUMPER
RV904 BRIGHT
RV903 V SIZE
DEFLECTION YOKE
L903 HLC
CN901
CN902
W901
SYSCON (VS-125) TALLY
VIDEO (1) (VS-125) EVF OUT
EVF 5V
D901 (TALLY)
IC901 ⑪ REC
IC901 ⑬ REC
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
VCC
G1
G2
H
HV
DH1
DH2
DV1
DV2
2.5Vp-p
1Vp-p
09

3-10. POWER BLOCK DIAGRAM


MA-233 BOARD (See Page 4-59)
IC001 MIC AMP
IC002 REMOTE CONTROL RECIEVER
CN001
CN1301
AU4.9V
SIRCS VCC
DD-78 BOARD (See Page 4-73)
J901 BATTERY TERMINAL
PS451
PS450
PS452
MT UNREG
CAM UNREG
VTR UNREG
IC901 DC/DC CONVERTER
VCC1
TRIANGLE OSC
PWM MOD
SWITCHING DRIVE
VOLTAGE ERROR AMP
V REF
SHORT CIRCUIT DETECT
TIMER LATCH SHORT CIRCUIT PROTECT
EMERGENCY DETECT
Q912
F ON
W/B EVF model
COLOR EVF model
Q911
POWER ON
ABCDE ON
DRUM/CAPSTAN PWM DRIVE
Q906, 907 DRUM VS / CAP VS SWITCHING
Q902 SWITCHING
T901
D901 (1/2) -6.5V RECT
D901 (1/2) 15V RECT
L914
L915
Q915 EMERGENCY DETECT
Q914
Q908 EMERGENCY DETECT
Q910
Q909
Q904 SWITCHING
Q903 SWITCHING
Q905 SWITCHING
L905
L904
L908
L917
L913
L912
L911
L910
L909
L916
MOTOR UNREG
VTR UNREG
EVF UNREG
CAM-6.5V
CAM15V
EVF15V
CAM5V
D5V
EVF5V
VIDEO5V
AU5V
RP5V
D3.6V
SS3.6V
MT5V
MT5V (FOR MS3.6V)
VTR DD ON
CAM DD ON
LANC SIG
LANC DC
CAM DD ON
J902 LANC
CN901
CN502
SS3.6V
ZOOM SWITCH
CONTROL SWITCH BLOCK (FK)
09

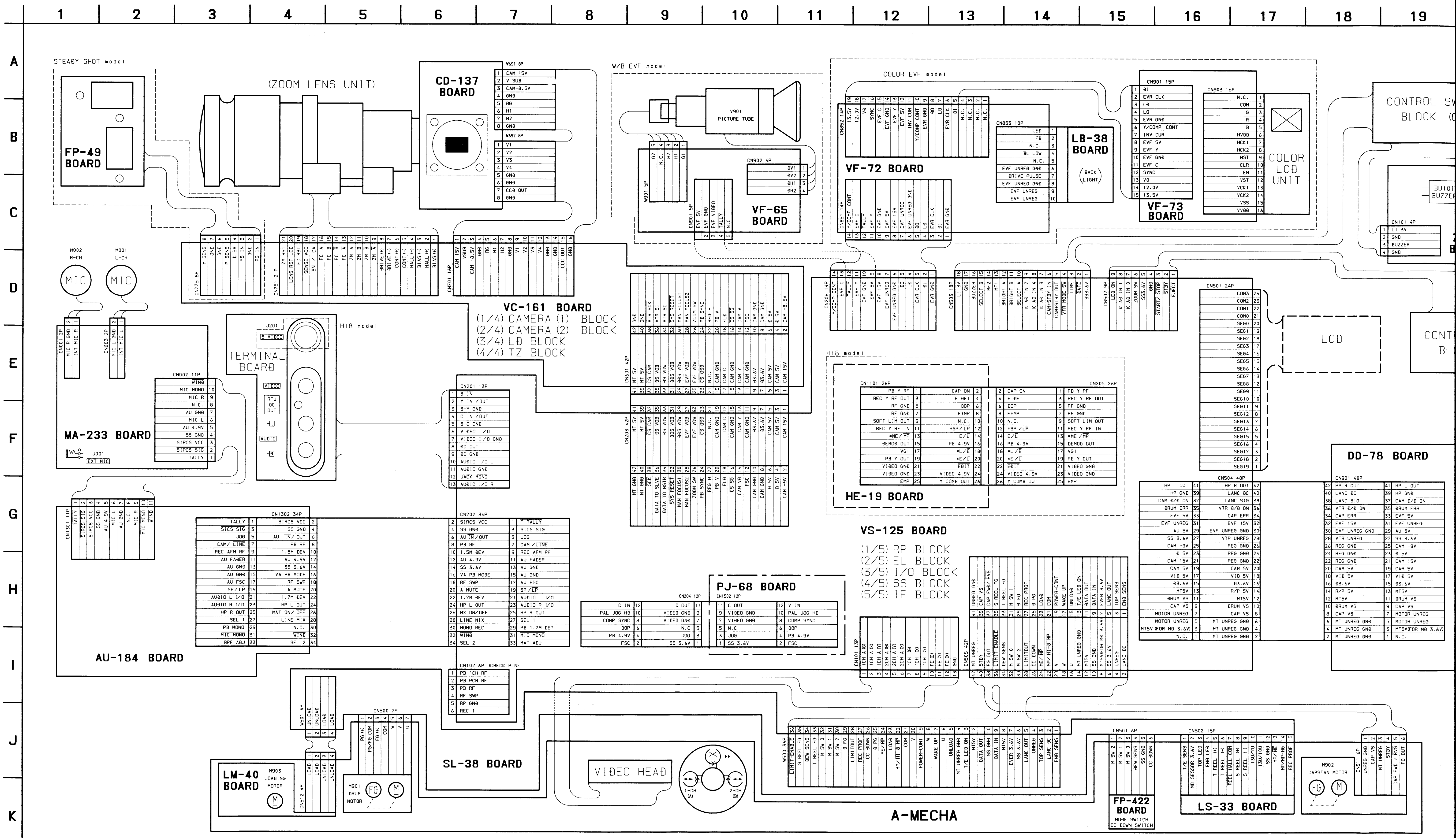


-233
OARD
IC001
MIC AMP
IC002
REMOTE CONTROL RECIEVER
CN001
Page 4-59)
AU4.9V
SIRCS VCC
CN1301
AUDIO REC/PB PROCESS
IC130
AU-184 BOARD
CN1302
(See Page 4-55)
TERMINAL BOARD
J201
RFU DC OUT
HI8 model
Y RF AMP
IC1101
HE-19 BOARD
CN1101
(See Page 4-42)
(See Page 4-46)
PJ-68 BOARD
JOG CHROMA PROCESS
IC1501
CN1502
CN201
CN205
VIDEO 4.9V
CN204
PB 4.9V
DC OUT
CN202
(See Page 4-27, 4-30 4-34, 4-36, 4-39)
VS-125 BOARD
EVF UNREG
EVF 5V
EVF 15V
CN206
MOTOR UNREG
VTR UNREG
EVF UNREG
CAM-8.5V
COLOR EVF model
Q900 Q901 (1/2)
CAM15V
EVF15V
Q915
EMERGENCY DETECT
Q908
EMERGENCY DETECT
Q910
CAM5V
D5V
EVF5V
VIG5V
AU5V
RP5V
CAM DD ON
D3.6V
SS3.6V
MT5V
MT5V (FOR MG3.6V)
VTR DD ON
CAM DD ON
LANC SIO
LANC DC
CN901
CN502
Q228, 227
VA PB MODE (IC505 (15))
Q951, 952
CURRENT LIMITER
L952
D/A CONVERTER (EVF)
IC951
VIDEO (1) Y/CHROMA PROCESS
IC201, 203, IC205, 208, IC204, 209
VIDEO 4.9V
RP5V
VIDEO (2) REC/PB AMP
IC102
EEP ROM
IC501
ATF SERVO, CLOG DETECT PB SP/LP DETECT
IC508
SERVO, SYSTEM CONTROL
IC505
SS3.6V
IC500
MODE CONTROL
BATT SENS
BATT IN
CLK 10M/32K
VCC
VS
AVCC
VCC
RESET
LI PREEND
LANC POWER ON
YTR DD ON
CAM DD ON
IC502
PS501
3.6V REG
BATTERY IN DETECT
L501
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
VTR UNREG
WAKE UP
EVER 3.6V
UNREG
POWER CONT
LANC OUT
LANC DC
CN505
DS3.6V
LI 3V
D501
CN503
IC506
DRUM MOTOR DRIVE
PS550
MT5V
SS3.6V
MT5V FOR MG 3.6V
MT UNREG
CN505
W500
Q560-562
3.6V REG
L505
IC507
VC
LOADING MOTOR DRIVE
DRUM FG/PG AMP REEL FG AMP
CURRENT LIMITER
5.6V REG
MG SENSER 3.6V
CN502
SL-38 BOARD
(See Page 4-51)
CN511
CAPSTAN MOTOR DRIVE
IC001
REEL FG, TAPE LED
LS-33 BOARD
(See Page 4-51)
ZOOM SWITCH
CONTROL SWITCH BLOCK (FK)
FUCTION KEY
CONTROL SWITCH BLOCK (CK)
CN101
LITHIUM BATTERY
ZB-2 BOARD
(See Page 4-47)
(See Page 4-62)
W/B EVF model
VF-65 BOARD
CN901
CRT DRIVE
IC901
COLOR EVF model
VF-72 BOARD
(See Page 4-67)
IC852
13.5V/12V REG
CN852
CN851
IC851, T851
INVERTER DC/AC CONVERTER
HIGH
CN853
VF-73 BOARD
(See Page 4-68)
12V
CN902 FOR CHECK
IC903
D/A CONVERTER (EVF)
VVDD
HVDD
CN903
LCD DRIVE
CN901
IC901, IC902
LCD PANEL
LB-38 BOARD
(See Page 4-67)
BL801 BACK LIGHT
CN801
VC-125 BOARD
(See Page 4-11, 4-14, 4-17, 4-19)
D/A CONVERTER (EVF)
IC603
A/D CONVERTER
IC704
TIMING GENERATOR
IC702
V DRIVE V SUB REG
IC701
IRIS DRIVE HALL AMP
IC751, IC752, IC755
FOCUS/ZOOM PRE DRIVE
IC753
FOCUS/ZOOM DRIVE
IC754
CAM5V
D5V
D3.6V
CAM15V
CAM-8.5V
MT5V
CAM15V
CAM-8.5V
CAM5V
D5V
D3.6V
CN203
CN601
L613
L609
L610
L611
L612
L614
CAMERA CONTROL
IC602
EEP ROM
IC601
SYNC GENERATOR
IC610
OPTICAL DETECTER
IC611
CAMERA CORE (DIGITAL CAMERA PROCESS)
IC609
ON SCREEEN DISPLAY
IC614
ZOOM PROCESS
IC613
CAM 5V
CHARACTER MIX
IC604
STANDARD 8 and W/B EVF model
S/H AGC SIGNAL SEPARATION
IC703
DETECT COMPENSATOR
IC705
STEADY SHOT model
STEADY SHOT CONTROL
IC777
A/D CONVERTER
IC776
STEADY SHOT SENSOR AMP/SWITCH
IC772 IC775
(See Page 4-6)
CD-137 BOARD
IC691
CCD IMAGER
CN701
SENS VCC
CN751
FOCUS ZOOM SENSOR
ZOOM LENS UNIT
R771
D5V
CN775
PITCH/YAW SENSOR
FP-49 BOARD
(See Page 4-7)

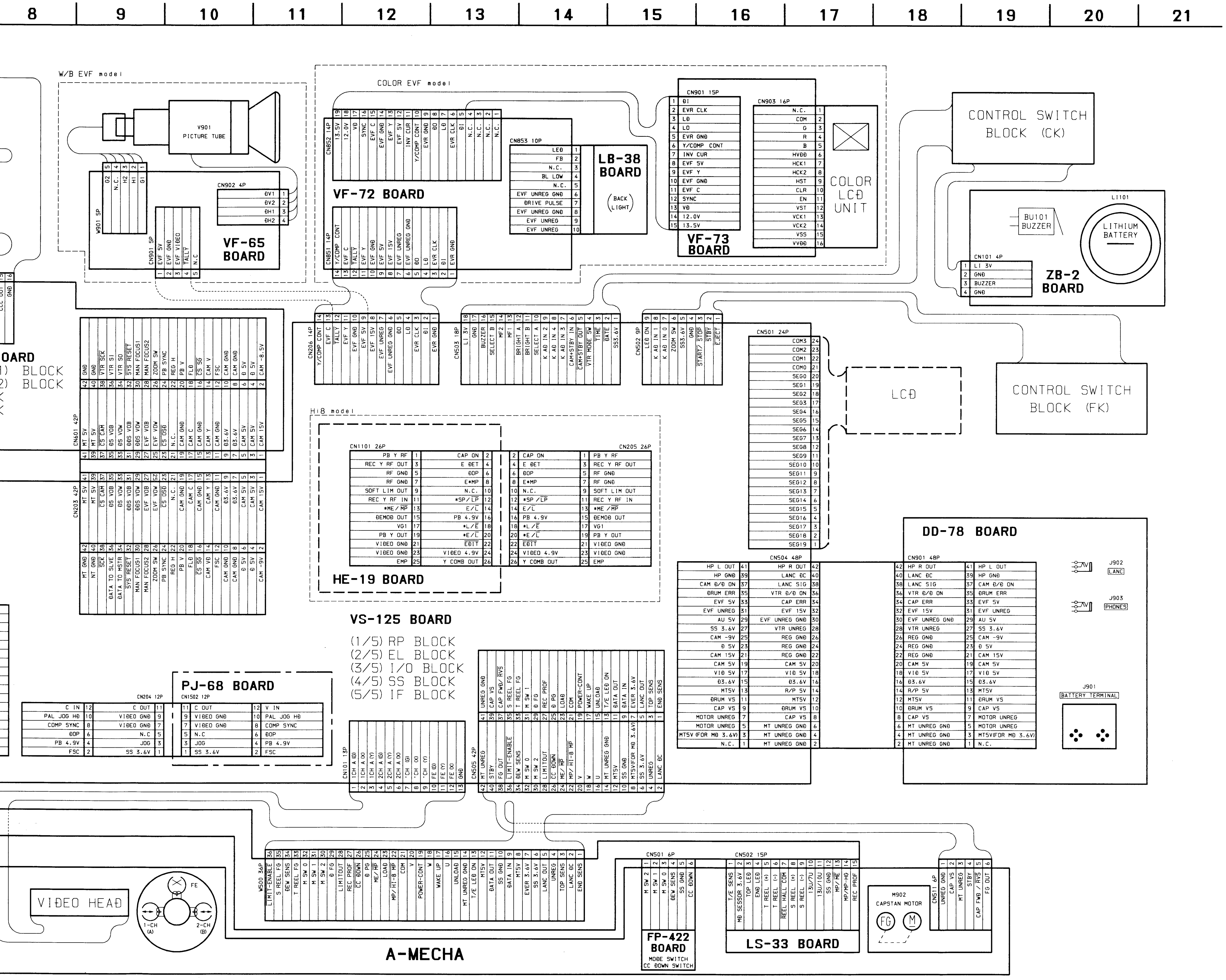
SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



STEADY SHOT model
FP-49 BOARD
(ZOOM LENS UNIT)
CD-137 BOARD
W/B EVF model
V901 PICTURE TUBE
VF-65 BOARD
COLOR EVF model
VF-72 BOARD
LB-38 BOARD
(BACK LIGHT)
VF-73 BOARD
COLOR LCD UNIT
CONTROL SW BLOCK
BU101 BUZZER
M002 R-CH MIC
M001 L-CH MIC
CN775 8P
CN751 21P
CN701 16P
VC-161 BOARD
(1/4) CAMERA (1) BLOCK
(2/4) CAMERA (2) BLOCK
(3/4) LD BLOCK
(4/4) TZ BLOCK
CN601 42P
CN203 42P
CN206 14P
CN503 18P
CN502 9P
CN501 24P
LCD
TERMINAL BOARD
J201 S VIDEO
Hi8 model
VIDEO
RFU DC OUT
AUDIO
L
R
CN002 11P
MA-233 BOARD
J001 EXT MIC
CN201 13P
Hi8 model
CN1101 26P
CN205 26P
HE-19 BOARD
DD-78 BOARD
CN504 48P
CN901 48P
CN1301 11P
CN1302 34P
CN202 34P
AU-184 BOARD
VS-125 BOARD
(1/5) RP BLOCK
(2/5) EL BLOCK
(3/5) I/O BLOCK
(4/5) SS BLOCK
(5/5) IF BLOCK
PJ-68 BOARD
CN204 12P
CN1502 12P
CN101 13P
CN505 42P
CN102 6P (CHECK PIN)
W501 4P
CN500 7P
SL-38 BOARD
LM-40 BOARD
M903 LOADING MOTOR
CN512 4P
M901 DRUM MOTOR
FG
M
VIDEO HEAD
FE
1-CH (A)
2-CH (B)
W500 36P
A-MECHA
CN501 6P
FP-422 BOARD
MODE SWITCH
CC DOWN SWITCH
CN502 15P
LS-33 BOARD
M902 CAPSTAN MOTOR
CN511 6P


8
9
10
11
12
13
14
15
16
17
18
19
20
21
W/B EVF model
V901 PICTURE TUBE
VF-65 BOARD
CN902 4P
W901 5P
CN901 5P
COLOR EVF model
CN852 14P
CN853 10P
VF-72 BOARD
CN851 14P
LB-38 BOARD
BACK LIGHT
CN901 15P
VF-73 BOARD
CN903 16P
COLOR LCD UNIT
CONTROL SWITCH BLOCK (CK)
ZB-2 BOARD
CN101 4P
BU101 BUZZER
LI101 LITHIUM BATTERY
CN206 14P
CN503 18P
CN502 9P
CN501 24P
LCD
CONTROL SWITCH BLOCK (FK)
CN601 42P
CN203 42P
OARD
) BLOCK
) BLOCK
Hi8 model
CN1101 26P
CN205 26P
HE-19 BOARD
VS-125 BOARD
(1/5) RP BLOCK
(2/5) EL BLOCK
(3/5) I/O BLOCK
(4/5) SS BLOCK
(5/5) IF BLOCK
CN504 48P
DD-78 BOARD
CN901 48P
J902 LANC
J903 PHONES
J901 BATTERY TERMINAL
PJ-68 BOARD
CN204 12P
CN1502 12P
CN101 13P
CN505 42P
W500 36P
CN501 6P
CN502 15P
CN511 6P
VIDEO HEAD
1-CH (A)
2-CH (B)
FE
A-MECHA
FP-422 BOARD
MODE SWITCH
CC DOWN SWITCH
LS-33 BOARD
M902 CAPSTAN MOTOR
FG
M

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ▨ : Pattern from the side which enables seeing.
  (The other layers'patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- ○ : Through hole .

* Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊡ : nonflammable resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repeair.
- ━━ : B+ Line.
- - - - : B– Line.
- ⇨ : IN/OUT direction of (+, –) B LINE.
- Circled numbers refer to waveforms.

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

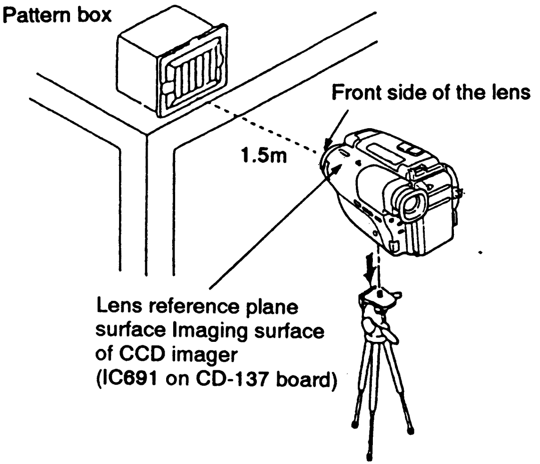
Refer to page 4 as for the distinction of the function table of models and classification.

- **Measuring conditions voltage value and waveform.**

(CAMERA block)

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

1. Connection


Pattern box
Front side of the lens
1.5m
Lens reference plane surface Imaging surface of CCD imager (IC691 on CD-137 board)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

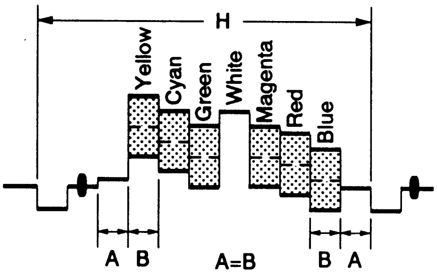


Fig. a (Video output terminal output waveform)

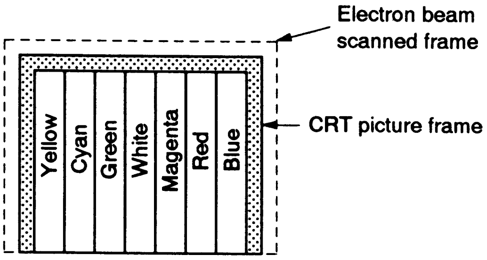


Fig. b (Picture on monitor TV)

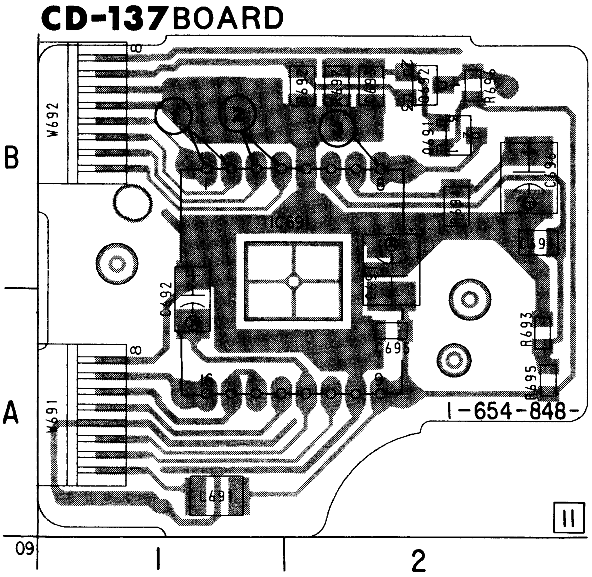
(VIDEO, SERVO/SYSTEM CONTROL, AUDIO, LCD CONTROL)

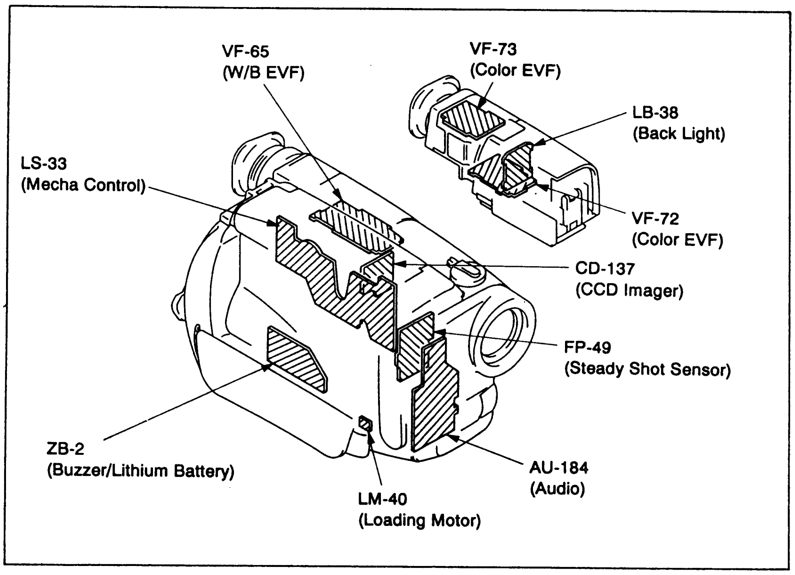
- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

Note: Referto "3-1-4. How to set the REC Mode in the model with out REC switch (Except CCD-TR880E E, Australian model" in VIDEO SECTION ADJUSTMENT. (See page 6–32)

CD-137 (CCD IMAGER) PRINTED WIRING BOARD

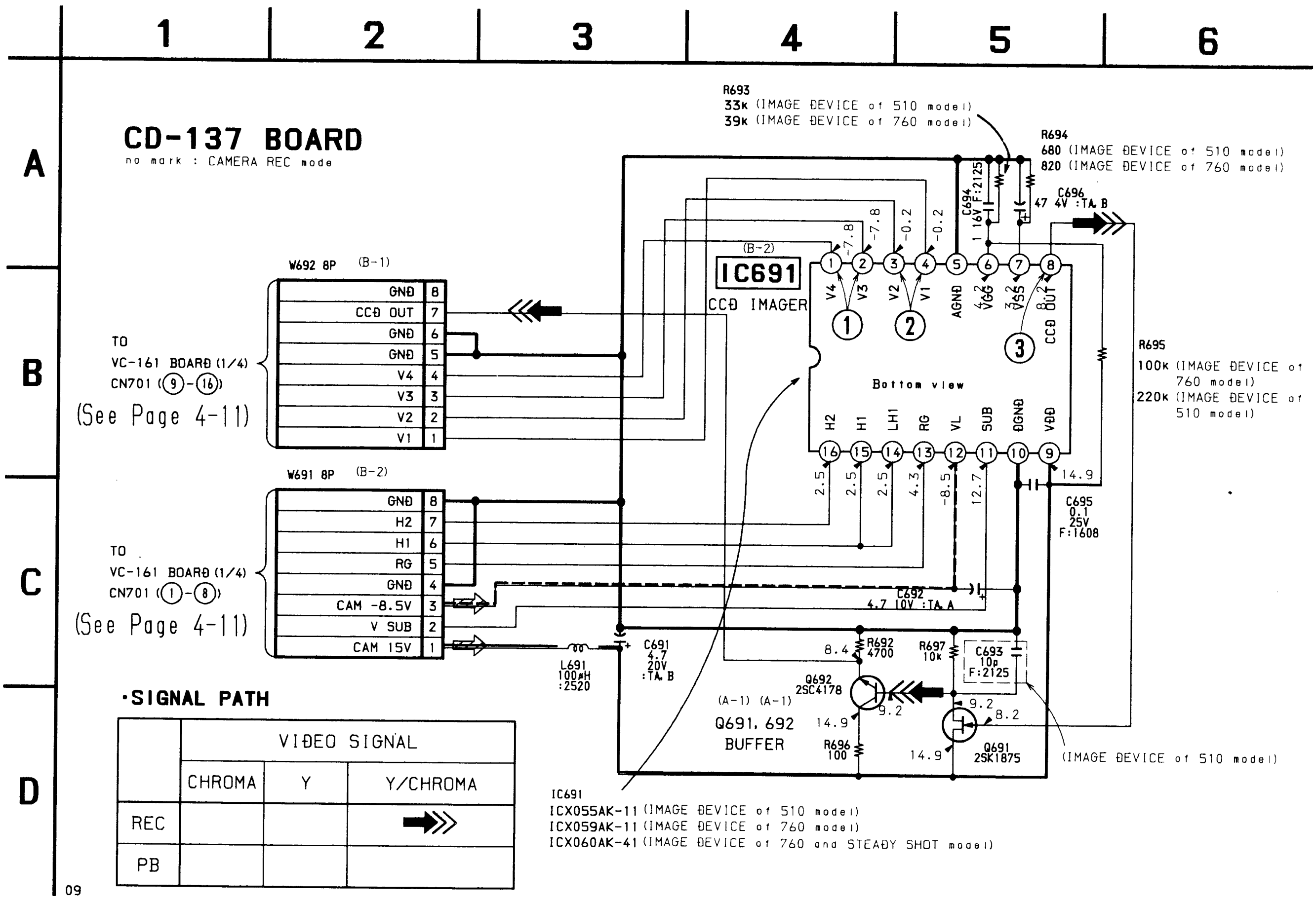
— Ref. No. CD-137 BOARD: 3000 series —


CD-137BOARD
W692
W691
R692
R697
C693
Q692
R696
Q691
C696
R694
IC691
C694
C692
C695
R693
R695
L691
1-654-848-
11
B
A
09
1
2


VF-65
(W/B EVF)
VF-73
(Color EVF)
LB-38
(Back Light)
LS-33
(Mecha Control)
VF-72
(Color EVF)
CD-137
(CCD Imager)
FP-49
(Steady Shot Sensor)
ZB-2
(Buzzer/Lithium Battery)
AU-184
(Audio)
LM-40
(Loading Motor)

CD-137 (CCD IMAGER) SCHEMATIC DIAGRAM

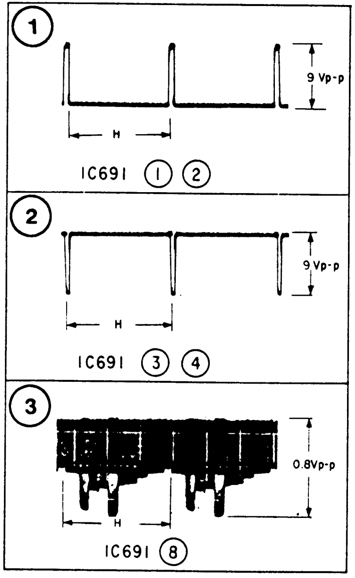
— Ref. No. CD-137 BOARD: 3000 series —


1
2
3
4
5
6
A
B
C
D
CD-137 BOARD
no mark : CAMERA REC mode
W692 8P (B-1)
GND 8
CCD OUT 7
GND 6
GND 5
V4 4
V3 3
V2 2
V1 1
TO VC-161 BOARD (1/4) CN701 ⑨-⑯
(See Page 4-11)
W691 8P (B-2)
GND 8
H2 7
H1 6
RG 5
GND 4
CAM -8.5V 3
V SUB 2
CAM 15V 1
TO VC-161 BOARD (1/4) CN701 ①-⑧
(See Page 4-11)
R693
33k (IMAGE DEVICE of 510 model)
39k (IMAGE DEVICE of 760 model)
R694
680 (IMAGE DEVICE of 510 model)
820 (IMAGE DEVICE of 760 model)
C694 1 16V F:2125
C696 47 4V :TA B
(B-2)
IC691
CCD IMAGER
V4 V3 V2 V1 AGND VGG VSS CCD OUT
Bottom view
H2 H1 LH1 RG VL SUB DGND VDD
-7.8
-7.8
-0.2
-0.2
4.2
3.2
8.2
2.5
2.5
2.5
4.3
-8.5
12.7
14.9
R695
100k (IMAGE DEVICE of 760 model)
220k (IMAGE DEVICE of 510 model)
C695 0.1 25V F:1608
C692 4.7 10V :TA A
L691 100μH :2520
C691 4.7 20V :TA B
8.4
R692 4700
R697 10k
C693 10p F:2125
Q692 2SC4178
9.2
9.2
8.2
(A-1) (A-1)
Q691, 692 BUFFER
14.9
R696 100
14.9
Q691 2SK1875
(IMAGE DEVICE of 510 model)
IC691
ICX055AK-11 (IMAGE DEVICE of 510 model)
ICX059AK-11 (IMAGE DEVICE of 760 model)
ICX060AK-41 (IMAGE DEVICE of 760 and STEADY SHOT model)
09

•SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡》
PB			

CD-137 BOARD

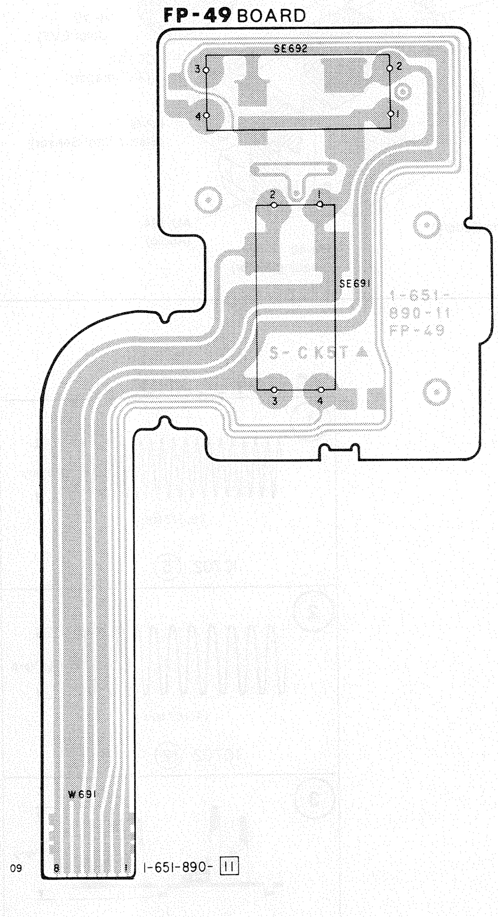


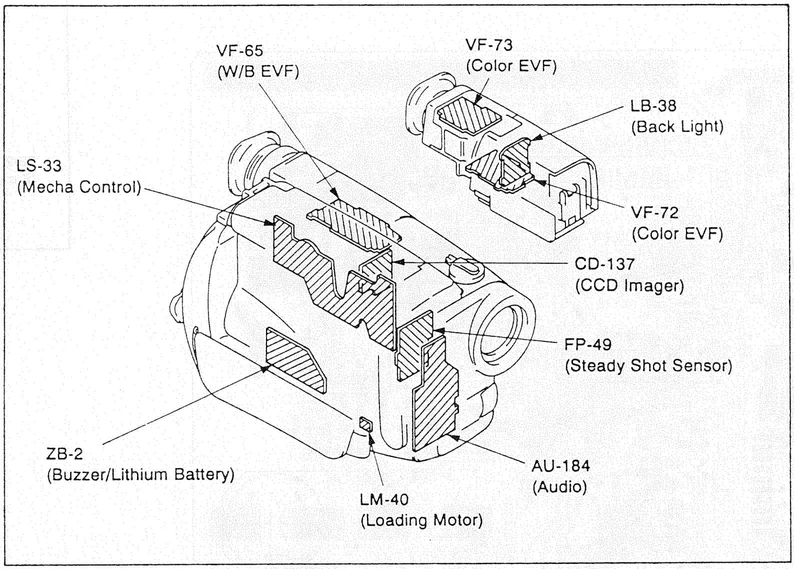
Note on the CCD Imager replacement

- The CCD imager is not mounted for the already mounted CD-137 board supplied as the repair parts.
  When replacing the CD-137 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

FP-49 (STEADY SHOT SENSOR) PRINTED WIRING BOARD

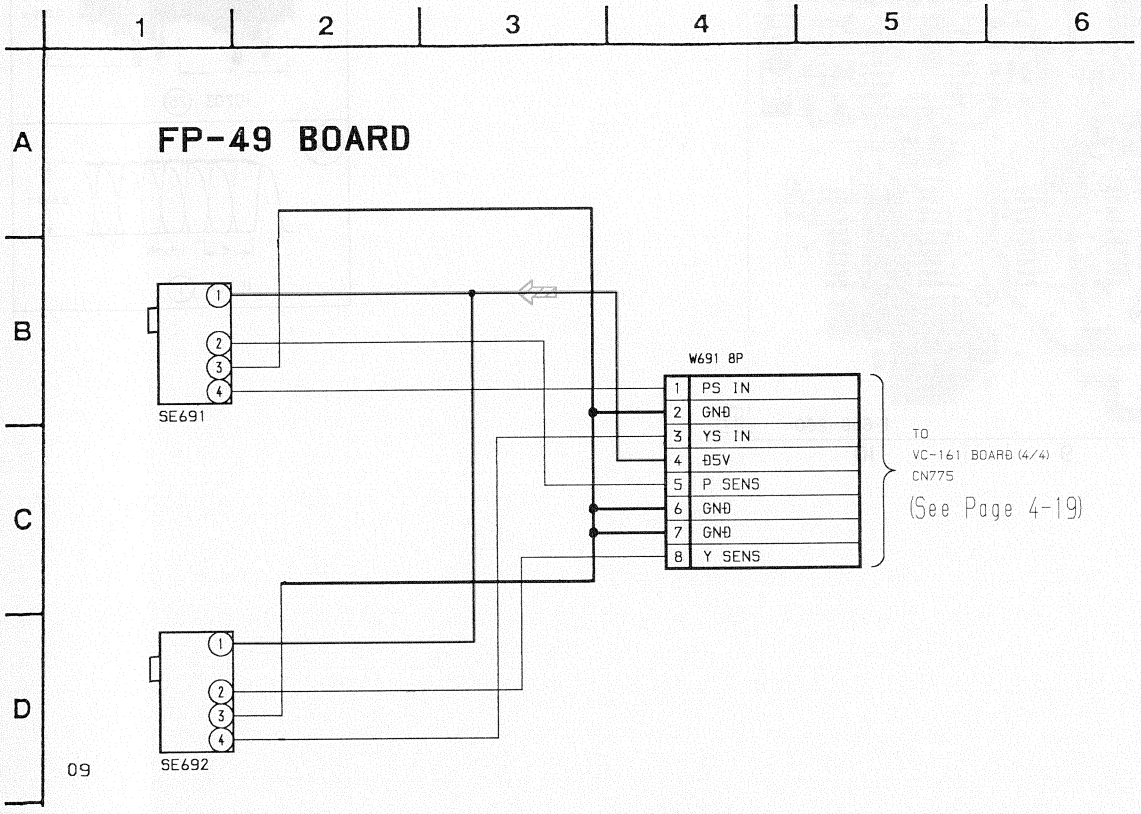
— Ref. No. FP-49 BOARD: 3000 series —


FP-49 BOARD
SE692
SE691
1-651-890-11 FP-49
5-CKST▲
W691
09
8
1
1-651-890-11


VF-65 (W/B EVF)
VF-73 (Color EVF)
LB-38 (Back Light)
LS-33 (Mecha Control)
VF-72 (Color EVF)
CD-137 (CCD Imager)
FP-49 (Steady Shot Sensor)
ZB-2 (Buzzer/Lithium Battery)
AU-184 (Audio)
LM-40 (Loading Motor)

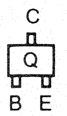
FP-49 (STEADY SHOT SENSOR) SCHEMATIC DIAGRAM

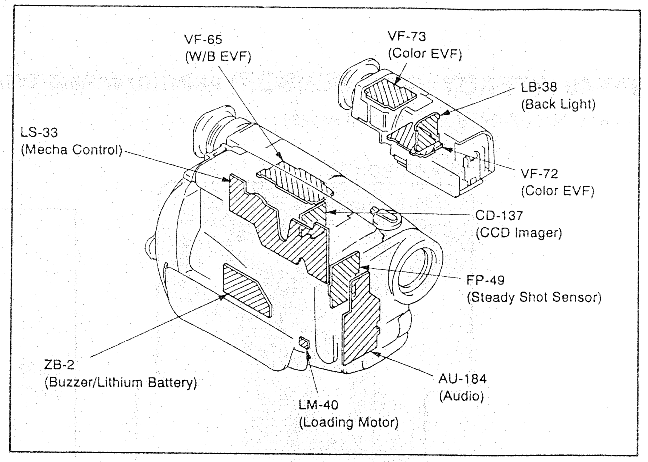
— Ref. No. FP-49 BOARD: 3000 series —


1
2
3
4
5
6
A
B
C
D
FP-49 BOARD
SE691
SE692
W691 8P
1 PS IN
2 GND
3 YS IN
4 D5V
5 P SENS
6 GND
7 GND
8 Y SENS
TO VC-161 BOARD (4/4) CN775
(See Page 4-19)
09

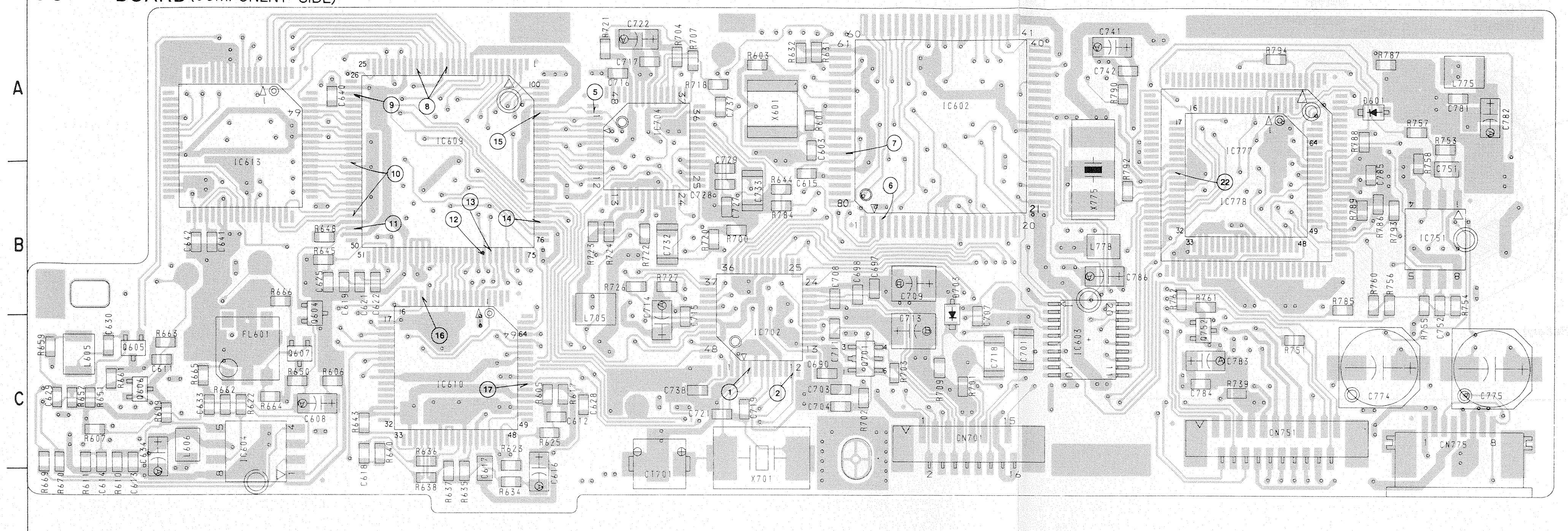
VC-161 (CAMERA, LENS DRIVE, STEADY SHOT CONTROL) PRINTED WIRING BOARD

- **For printed wiring boards.**
- VC-161 board is a four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- Chip transistor

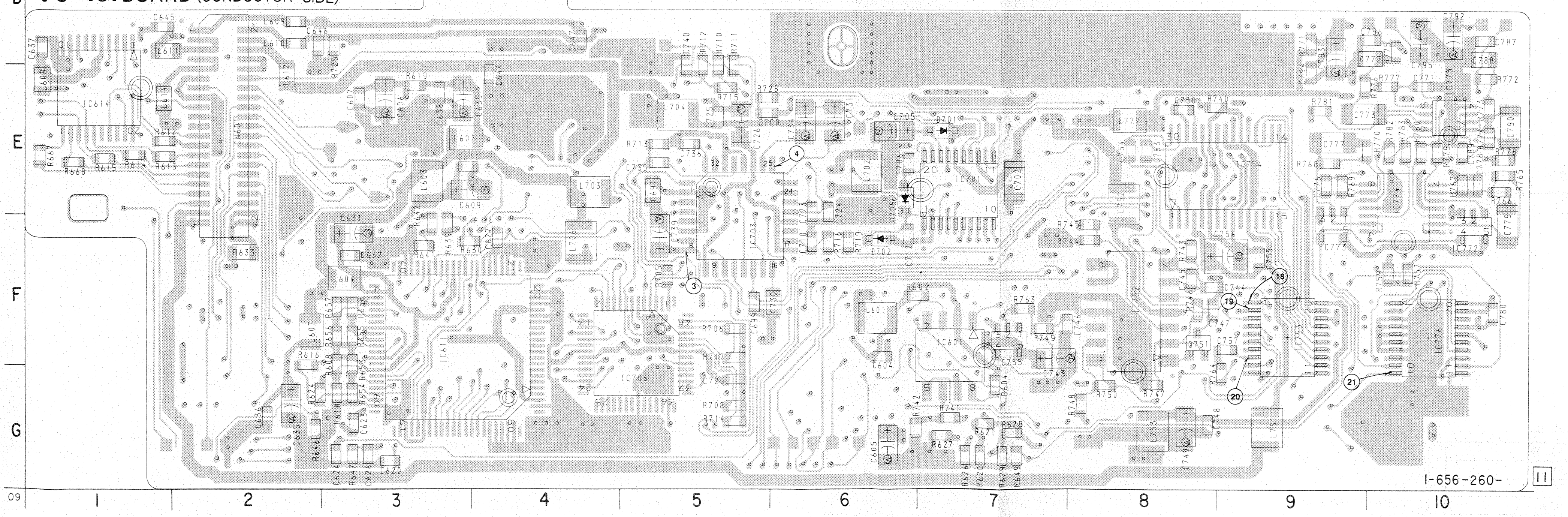



VF-65
(W/B EVF)
VF-73
(Color EVF)
LB-38
(Back Light)
LS-33
(Mecha Control)
VF-72
(Color EVF)
CD-137
(CCD Imager)
FP-49
(Steady Shot Sensor)
ZB-2
(Buzzer/Lithium Battery)
AU-184
(Audio)
LM-40
(Loading Motor)

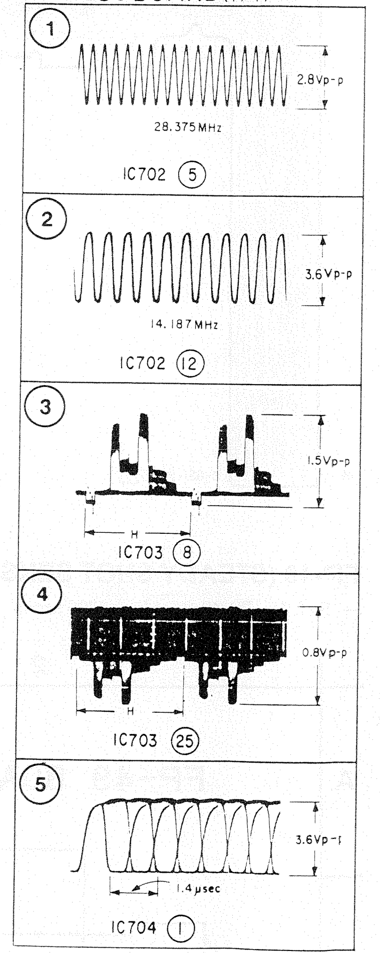
VC-161 BOARD (COMPONENT SIDE)


A
B
C
IC613
IC609
IC602
IC777
IC778
IC610
IC707
IC751
IC603
FL601
X601
X701
X775
CN701
CN751
CN775

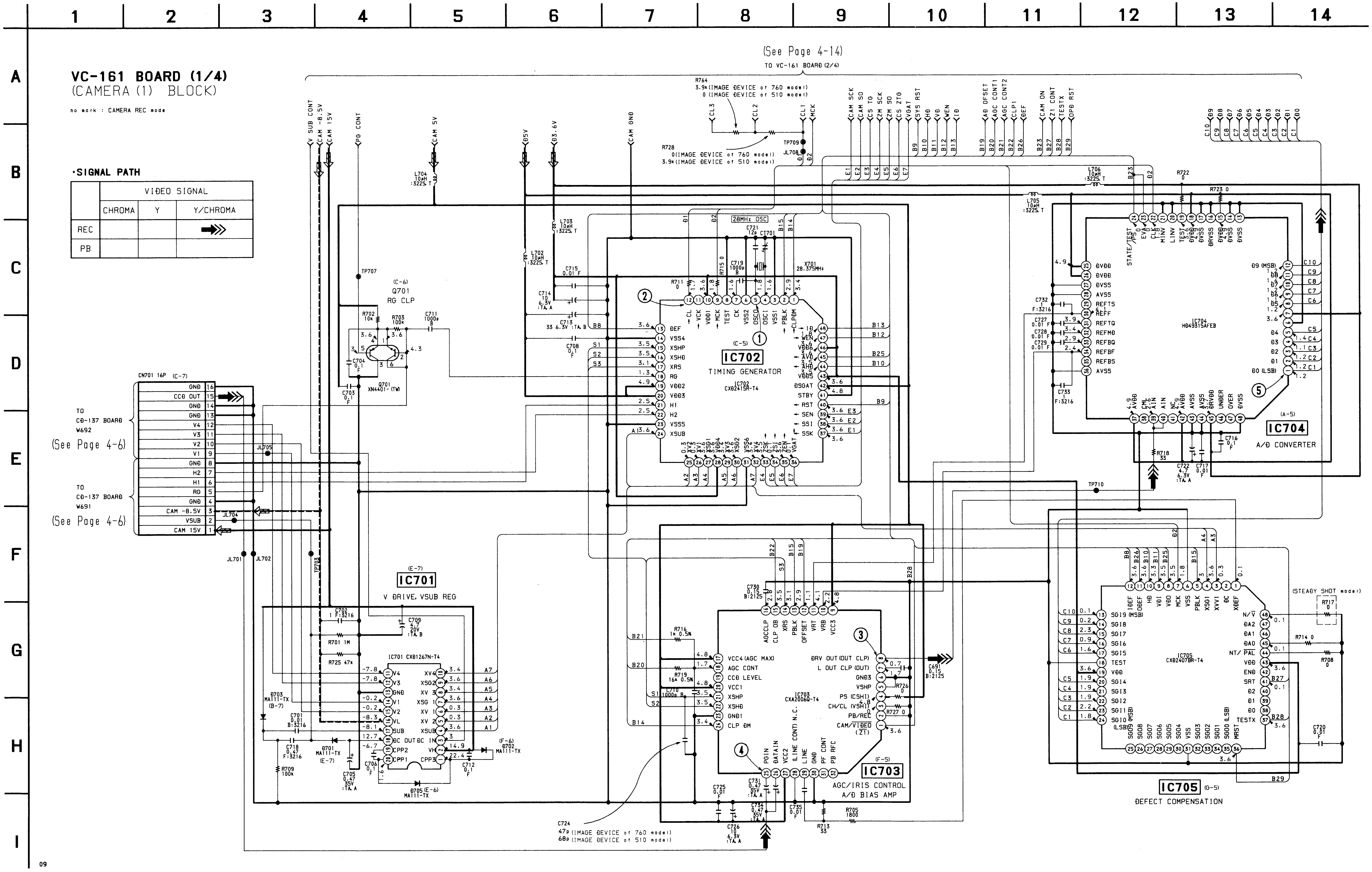
VC-161 BOARD (CONDUCTOR SIDE)


D
E
F
G
09
1
2
3
4
5
6
7
8
9
10
IC614
IC701
IC705
IC601
IC776
1-656-260-11

VC-161 BOARD (1/4)



VC-161 (CAMERA 1) SCHEMATIC DIAGRAM

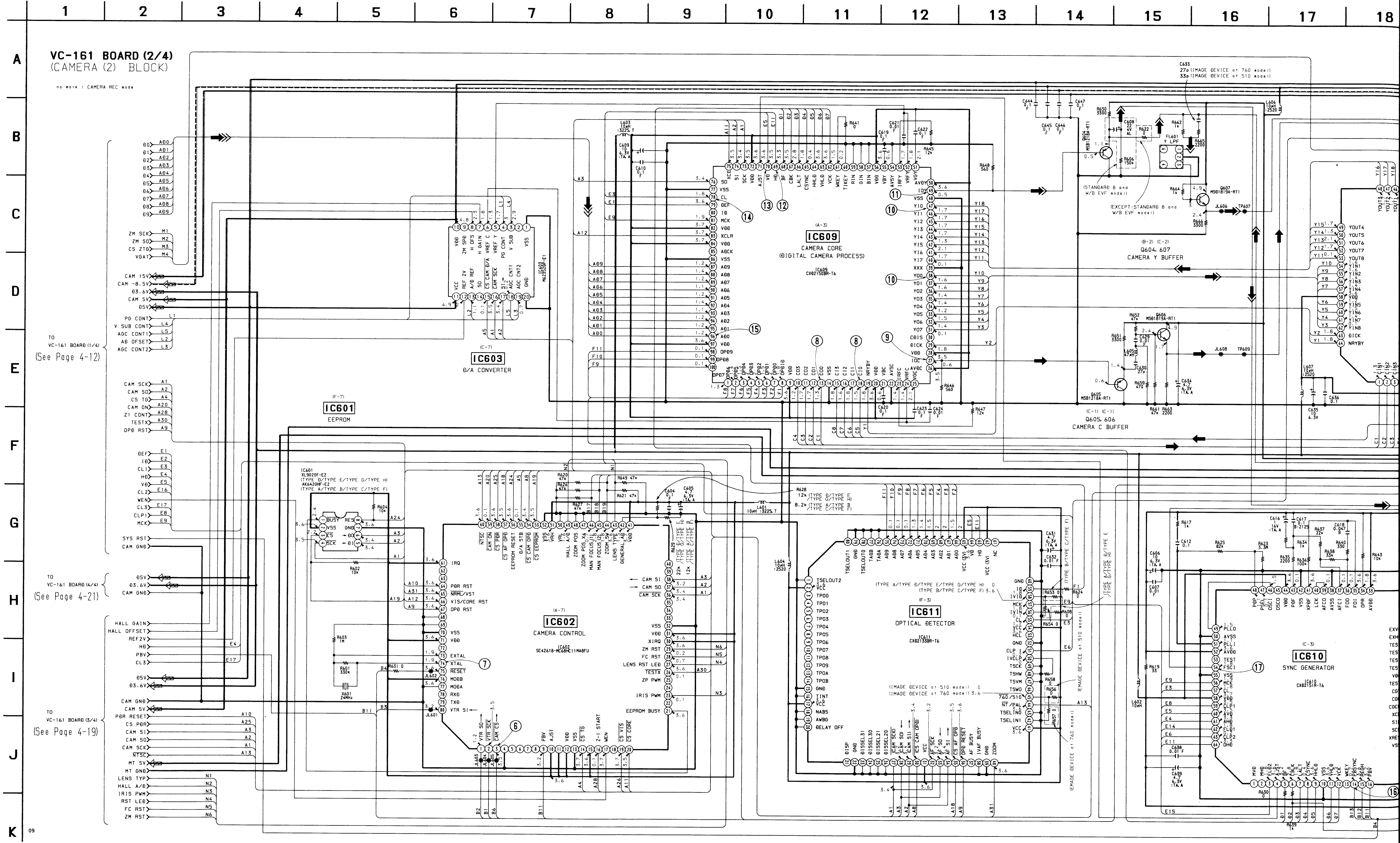

1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
I
VC-161 BOARD (1/4)
(CAMERA (1) BLOCK)
no mark : CAMERA REC mode
(See Page 4-14)
TO VC-161 BOARD (2/4)
R764
3.9k (IMAGE DEVICE of 760 model)
0 (IMAGE DEVICE of 510 model)
R728
0 (IMAGE DEVICE of 760 model)
3.9k (IMAGE DEVICE of 510 model)
V SUB CONT
CAM -8.5V
CAM 15V
PG CONT
CAM 5V
D5V
D3.6V
CAM GND
CL3
CL2
CL1
MCK
CAM SCK
CAM SO
CS TG
ZM SCK
ZM SO
CS ZTG
VGAT
SYS RST
HD
VD
WEN
ID
AD OFSET
AGC CONT1
AGC CONT2
CLP1
DEF
CAM ON
Z1 CONT
TESTX
DPD RST
TP709
JL708
L704 10μH
L703 10μH
L702 10μH
L705 10μH
L706 10μH
R722
R723 0
TP707
Q701
RG CLP
Q701 XN4401-(TW)
28MHz OSC
X701 28.375MHz
①
IC702
TIMING GENERATOR
IC702 CXD2415R-T4
IC704
HD49315AFEB
A/D CONVERTER
⑤
D9 (MSB)
D0 (LSB)
CN701 16P
GND
CCD OUT
V4
V3
V2
V1
H2
H1
RG
CAM -8.5V
VSUB
CAM 15V
TO
CD-137 BOARD
W692
(See Page 4-6)
TO
CD-137 BOARD
W691
(See Page 4-6)
JL705
JL704
JL701
JL702
TP703
IC701
V DRIVE, VSUB REG
IC701 CXD1267N-T4
D703 MA111-TX
D701 MA111-TX
D702 MA111-TX
D705 MA111-TX
TP710
③
④
IC703
AGC/IRIS CONTROL
A/D BIAS AMP
IC703 CXA2006Q-T4
C724
47p (IMAGE DEVICE of 760 model)
68p (IMAGE DEVICE of 510 model)
IC705
DEFECT COMPENSATION
IC705 CXD2407BR-T4
(STEADY SHOT model)
R717
R714 0
R708 0
C720 0.01
B29

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡
PB			

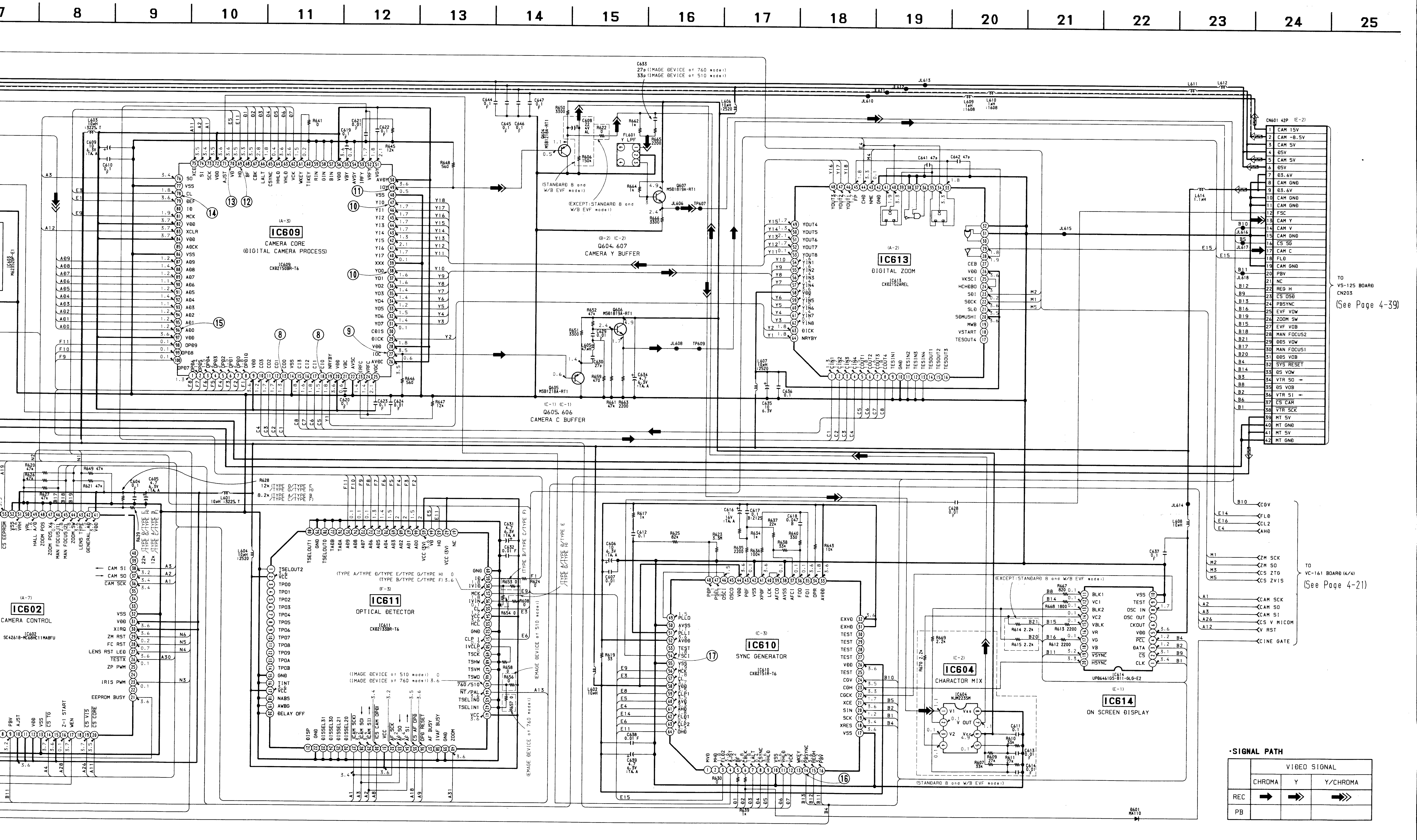
09

VC-161 (CAMERA 2) SCHEMATIC DIAGRAM

• Refer to page 4-9 for Printed Wiring Board.



VC-161 BOARD (2/4)
(CAMERA (2) BLOCK)
no mark : CAMERA REC mode
TO VC-161 BOARD (1/4) (See Page 4-12)
TO VC-161 BOARD (4/4) (See Page 4-21)
TO VC-161 BOARD (3/4) (See Page 4-19)
IC603 D/A CONVERTER
IC601 EEPROM
IC609 CAMERA CORE (DIGITAL CAMERA PROCESS) CXD2150BR-T6
IC602 CAMERA CONTROL SC42618-MC68HC11MA8FU
IC611 OPTICAL DETECTOR CXD2133BR-T6
IC610 SYNC GENERATOR CXD2151R-T6
Q604, 607 CAMERA Y BUFFER
Q605, 606 CAMERA C BUFFER
FL601 Y LPF
X601 24MHz
C633 27p (IMAGE DEVICE of 760 model) 33p (IMAGE DEVICE of 510 model)


7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
IC609
(A-3)
CAMERA CORE
(DIGITAL CAMERA PROCESS)
IC609 CXD2150BR-T6
C633 27p (IMAGE DEVICE of 760 model) 33p (IMAGE DEVICE of 510 model)
(STANDARD 8 and W/B EVF model)
(EXCEPT:STANDARD 8 and W/B EVF model)
(B-2) (C-2)
Q604, 607
CAMERA Y BUFFER
Q604 MSB1218A-RT1
Q607 MSD1819A-RT1
FL601 Y LPF
(C-1) (C-1)
Q605, 606
CAMERA C BUFFER
Q605 MSB1218A-RT1
Q606 MSD1819A-RT1
IC613
(A-2)
DIGITAL ZOOM
IC613 CXD2152AREL
CN601 42P (E-2)
1 CAM 15V
2 CAM -8.5V
3 CAM 5V
4 D5V
5 CAM 5V
6 D5V
7 D3.6V
8 CAM GND
9 D3.6V
10 CAM GND
11 CAM GND
12 FSC
13 CAM Y
14 CAM V
15 CAM GND
16 CS SG
17 CAM C
18 FLD
19 CAM GND
20 PBV
21 NC
22 REG H
23 CS OSD
24 PBSYNC
25 EVF VDW
26 ZOOM SW
27 EVF VDB
28 MAN FOCUS2
29 DDS VDW
30 MAN FOCUS1
31 DDS VDB
32 SYS RESET
33 DS VDW
34 VTR SO
35 DS VDB
36 VTR SI
37 CS CAM
38 VTR SCK
39 MT 5V
40 MT GND
41 MT 5V
42 MT GND
TO VS-125 BOARD CN203
(See Page 4-39)
IC602
(A-7)
CAMERA CONTROL
IC602 SC426I8-MC68HC11MA8FU
IC611
(F-3)
OPTICAL DETECTOR
IC611 CXD2133BR-T6
(TYPE A/TYPE D/TYPE E/TYPE G/TYPE H) 0
(TYPE B/TYPE C/TYPE F) 3.6
(IMAGE DEVICE of 510 model) 0
(IMAGE DEVICE of 760 model) 3.6
(IMAGE DEVICE of 510 model)
(IMAGE DEVICE of 760 model)
R628 12k (TYPE D/TYPE E /TYPE G/TYPE H) 8.2k (TYPE A/TYPE B /TYPE C/TYPE F)
IC610
(C-3)
SYNC GENERATOR
IC610 CXD2151R-T6
IC604
(C-2)
CHARACTOR MIX
IC604 NJM2235M
(STANDARD 8 and W/B EVF model)
IC614
(E-1)
ON SCREEN DISPLAY
IC614 UPD6461GS-811-GLG-E2
(EXCEPT:STANDARD 8 and W/B EVF model)
CGV
FLD
CL2
AHD
ZM SCK
ZM SO
CS ZTG
CS ZVIS
CAM SCK
CAM SO
CAM SI
CS V MICOM
V RST
CINE GATE
TO VC-161 BOARD (4/4)
(See Page 4-21)
CAM SI
CAM SO
CAM SCK
D601 MA110

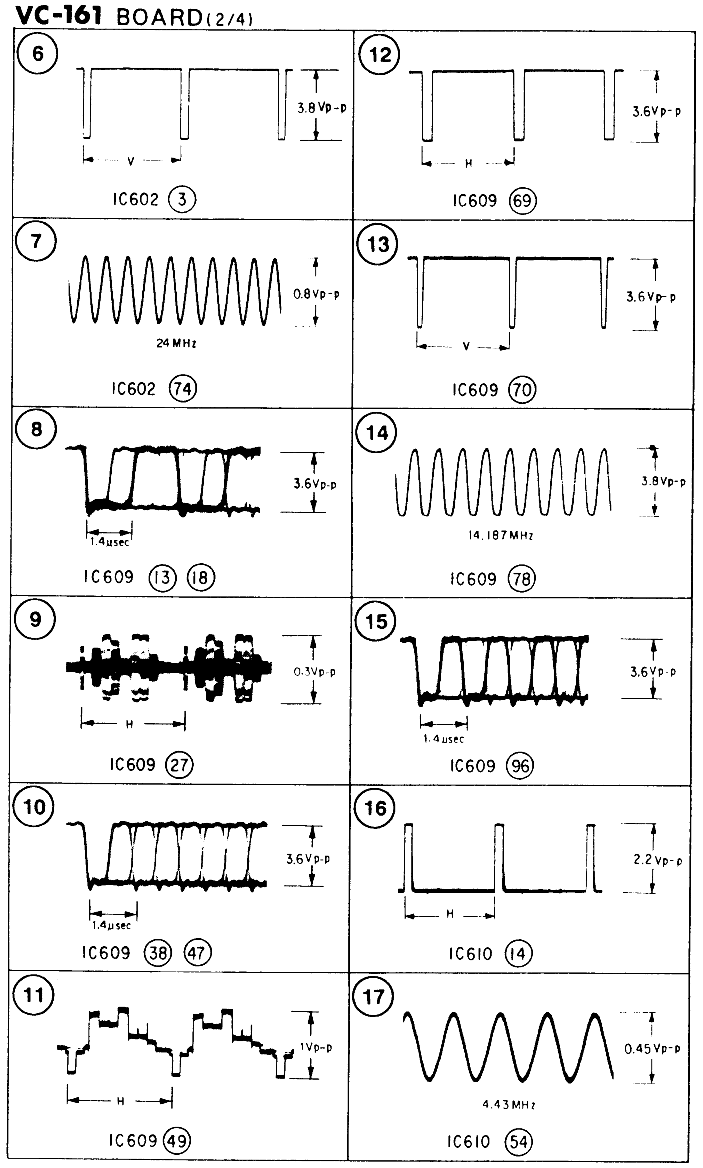
·SIGNAL PATH

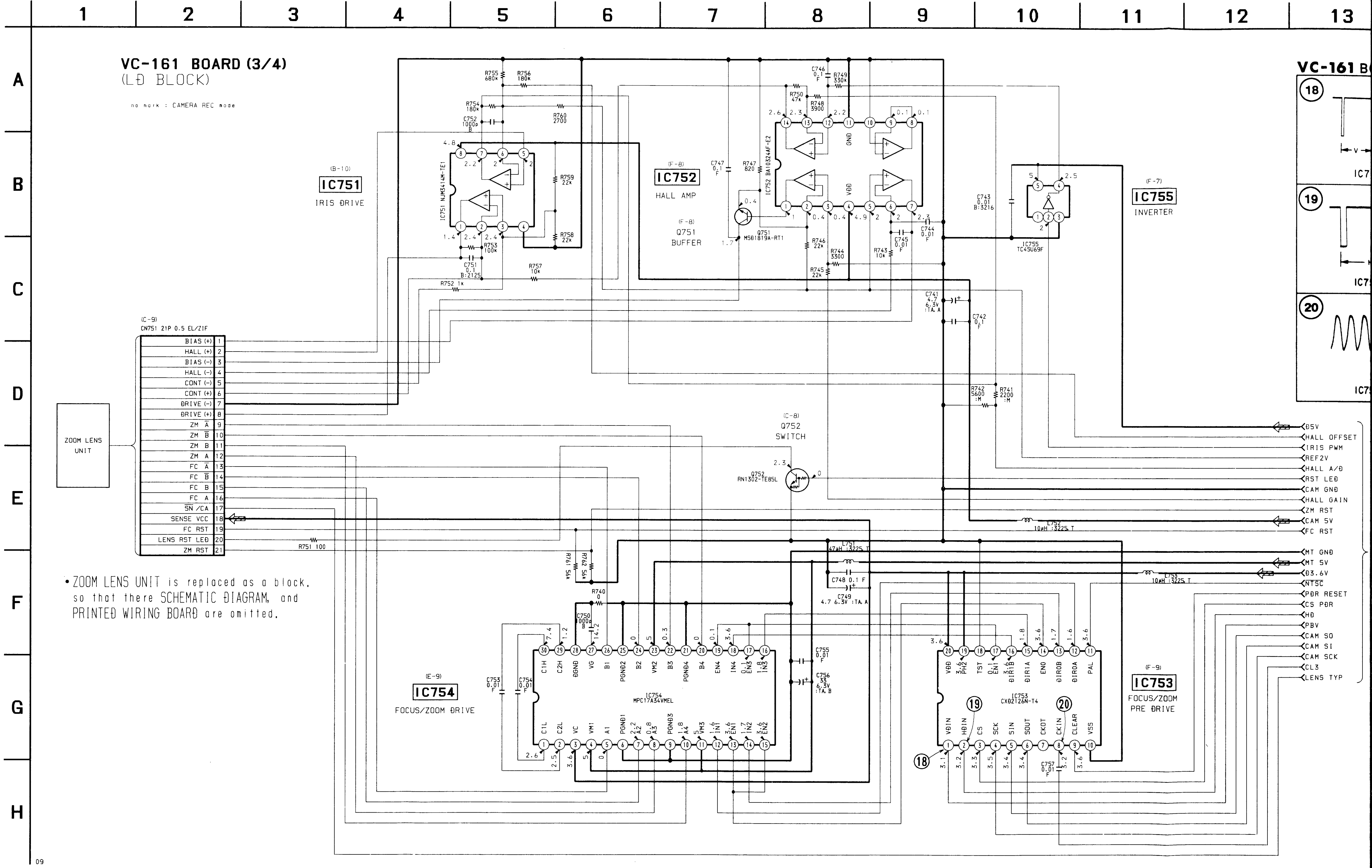
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡➡	➡➡➡
PB			

VC-161 (LENS DRIVE) SCHEMATIC DIAGRAM

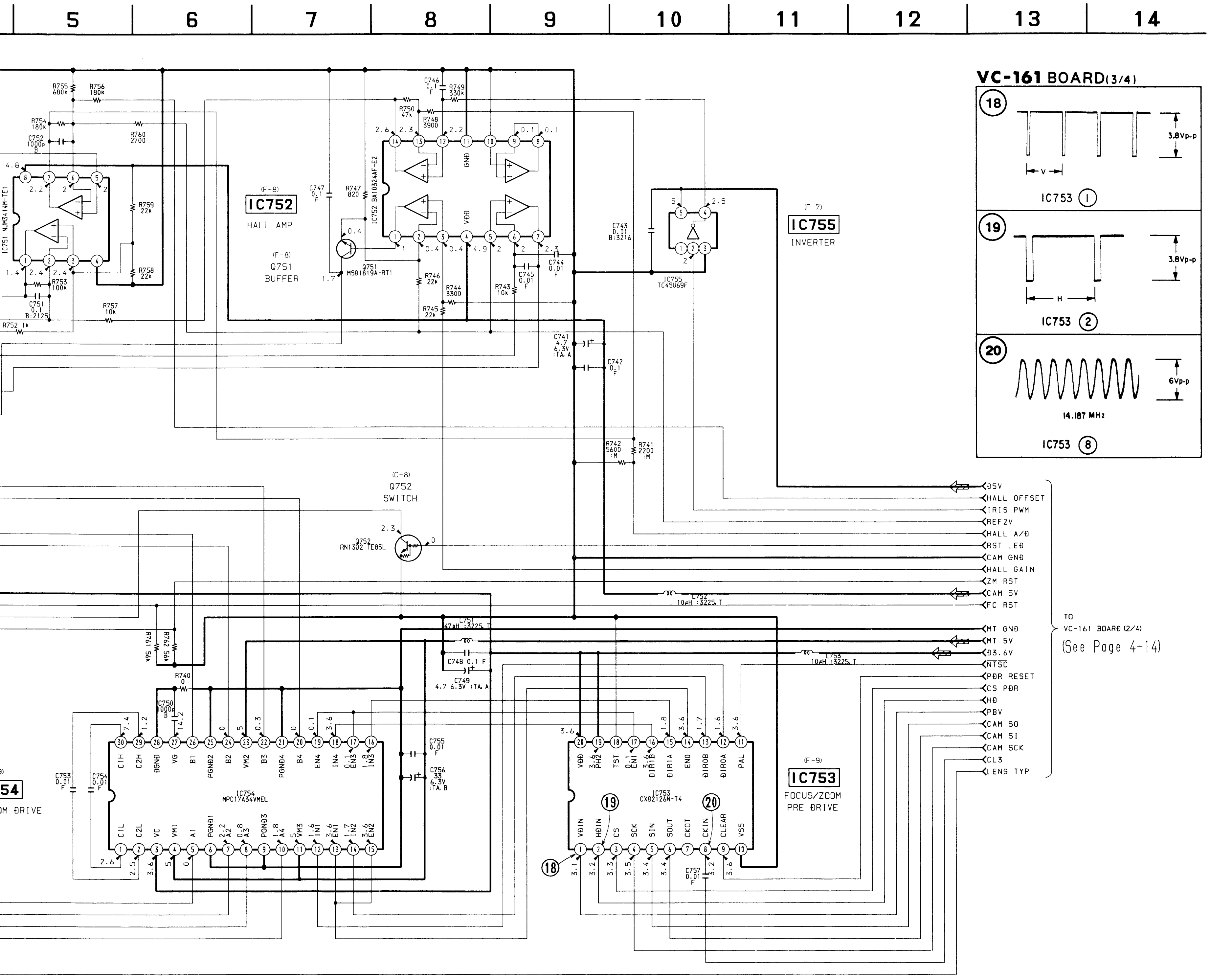
• Refer to page 4-9 for Printed Wiring Board.

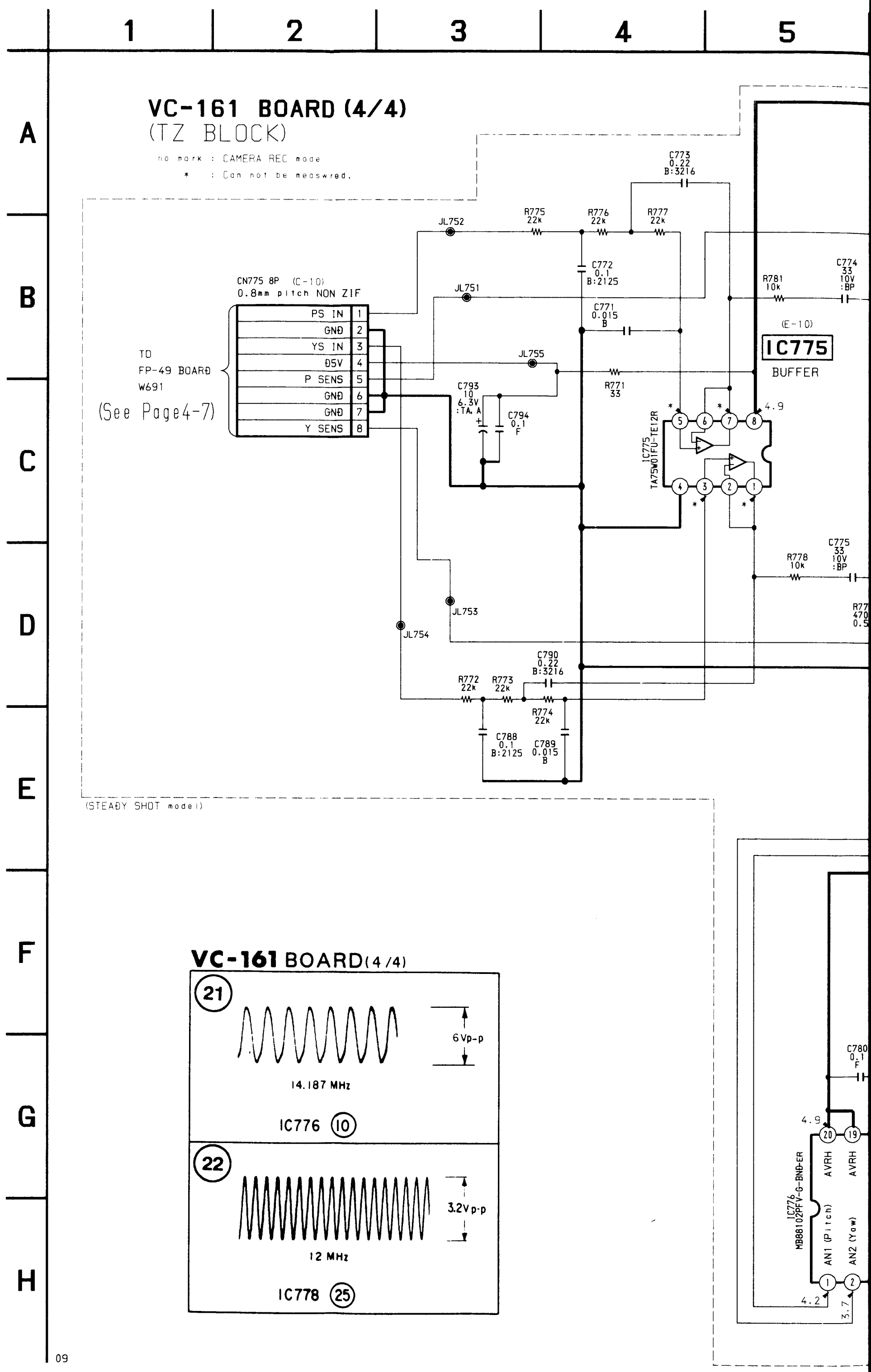
VC-161 BOARD(2/4)



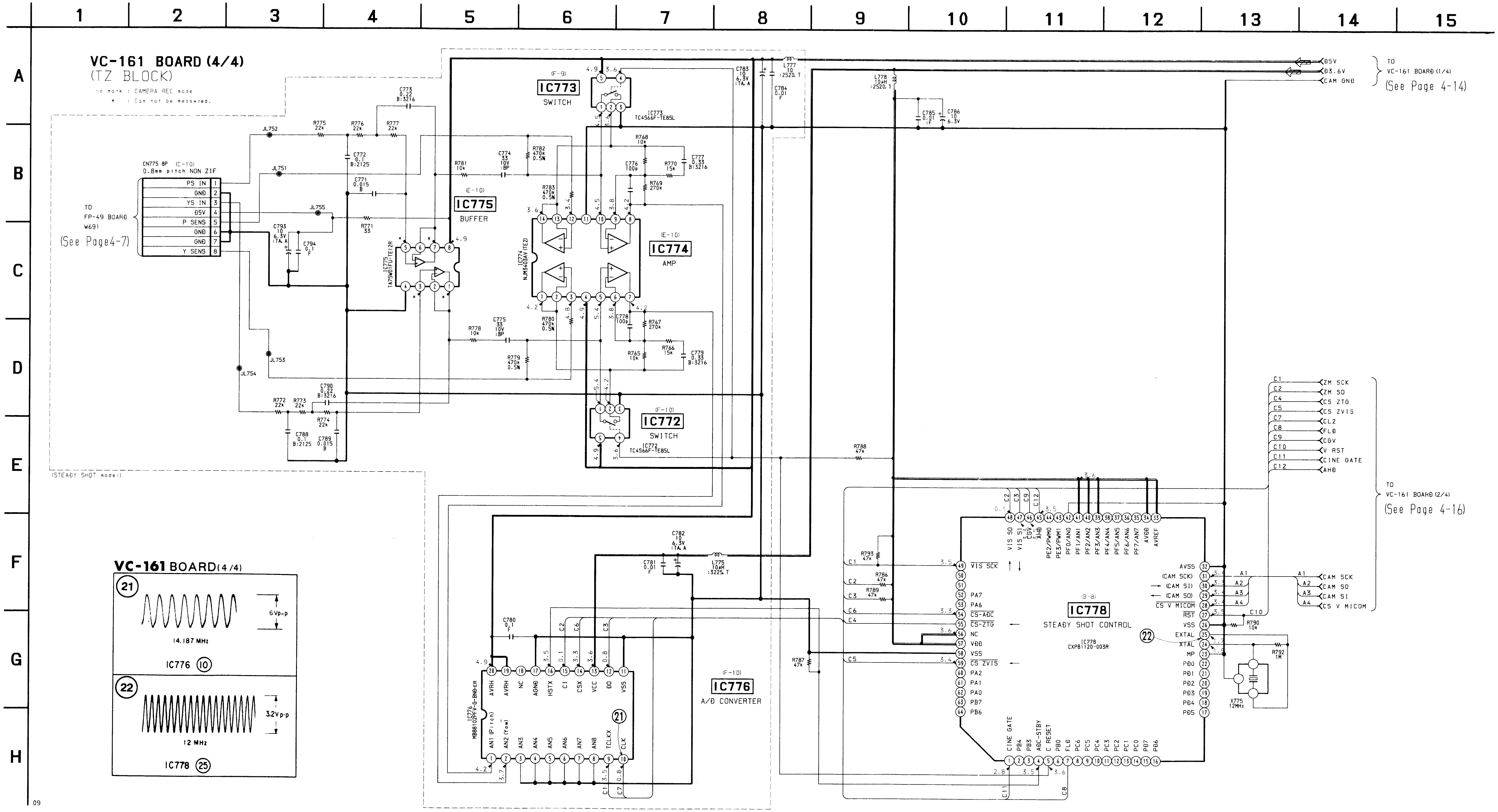

1 2 3 4 5 6 7 8 9 10 11 12 13
A B C D E F G H
VC-161 BOARD (3/4)
(LD BLOCK)
no mark : CAMERA REC mode
(B-10) IC751 IRIS DRIVE
IC751 NJM3414M-TE1
(F-8) IC752 HALL AMP
IC752 BA10324AF-E2
(F-8) Q751 BUFFER
Q751 MSD1819A-RT1
(F-7) IC755 INVERTER
IC755 TC4S69F
(C-9) CN751 21P 0.5 EL/ZIF
BIAS (+) 1
HALL (+) 2
BIAS (-) 3
HALL (-) 4
CONT (-) 5
CONT (+) 6
DRIVE (-) 7
DRIVE (+) 8
ZM Ā 9
ZM B̄ 10
ZM B 11
ZM A 12
FC Ā 13
FC B̄ 14
FC B 15
FC A 16
SN /CA 17
SENSE VCC 18
FC RST 19
LENS RST LED 20
ZM RST 21
ZOOM LENS UNIT
R751 100
(C-8) Q752 SWITCH
Q752 RN1302-TE85L
(E-9) IC754 FOCUS/ZOOM DRIVE
IC754 MPC17A34VMEL
(F-9) IC753 FOCUS/ZOOM PRE DRIVE
IC753 CXD2126N-T4
⑱ ⑲ ⑳
L751 47μH
L752 10μH
L753 10μH
D5V
HALL OFFSET
IRIS PWM
REF2V
HALL A/D
RST LED
CAM GND
HALL GAIN
ZM RST
CAM 5V
FC RST
MT GND
MT 5V
D3.6V
NTSC
PDR RESET
CS PDR
HD
PBV
CAM SO
CAM SI
CAM SCK
CL3
LENS TYP
VC-161 B
⑱ ⑲ ⑳
09

• ZOOM LENS UNIT is replaced as a block, so that there SCHEMATIC DIAGRAM, and PRINTED WIRING BOARD are omitted.


5
6
7
8
9
10
11
12
13
14
IC751 NJM3414M-TE1
(F-8)
IC752
HALL AMP
IC752 BA10324AF-E2
(F-8)
Q751
BUFFER
Q751 MSD1819A-RT1
(F-7)
IC755
INVERTER
IC755 TC4SU69F
VC-161 BOARD(3/4)
18
IC753 1
3.8Vp-p
V
19
IC753 2
3.8Vp-p
H
20
6Vp-p
14.187 MHz
IC753 8
(C-8)
Q752
SWITCH
Q752 RN1302-TE85L
D5V
HALL OFFSET
IRIS PWM
REF2V
HALL A/D
RST LED
CAM GND
HALL GAIN
ZM RST
CAM 5V
FC RST
MT GND
MT 5V
D3.6V
NTSC
POR RESET
CS POR
HD
PBV
CAM SO
CAM SI
CAM SCK
CL3
LENS TYP
TO
VC-161 BOARD (2/4)
(See Page 4-14)
IC754 MPC17A34VMEL
54
M DRIVE
C1H
C2H
DGND
VG
B1
PGND2
B2
VM2
B3
PGND4
B4
EN4
IN4
EN3
IN3
C1L
C2L
VC
VM1
A1
PGND1
A2
A3
PGND3
A4
VM3
IN1
EN1
IN2
EN2
IC753 CX02126N-T4
(F-9)
IC753
FOCUS/ZOOM
PRE DRIVE
VDD
PH2
TST
EN1
ΦIR1B
ΦIR1A
ENO
ΦIROB
ΦIROA
PAL
VDIN
HDIN
CS
SCK
SIN
SOUT
CKOT
CKIN
CLEAR
VSS
R755 680k
R756 180k
R754 180k
R752 1000p
R760 2700
R759 22k
R758 22k
R753 100k
C751 0.1 B:2125
R757 10k
R752 1k
C746 0.1 F
R749 330k
R750 47k
R748 3900
C747 0.1 F
R747 820
R746 22k
R745 22k
R744 3300
R743 10k
C745 0.01 F
C744 0.01 F
C743 0.01 B:3216
C741 4.7 6.3V :TA A
C742 0.1 F
R742 5600 :M
R741 2200 :M
L752 10μH :3225 T
L751 47μH :3225 T
C748 0.1 F
C749 4.7 6.3V :TA A
L753 10μH :3225 T
R761 56k
R762 56k
R740 0
C750 1000p B
C753 0.01 F
C754 0.01 F
C755 0.01 F
C756 33 6.3V :TA B
C757 0.01 F

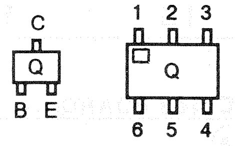

1
2
3
4
5
A
B
C
D
E
F
G
H
VC-161 BOARD (4/4)
(TZ BLOCK)
no mark : CAMERA REC mode
* : Can not be measured.
CN775 8P (C-10)
0.8mm pitch NON ZIF
PS IN 1
GND 2
YS IN 3
D5V 4
P SENS 5
GND 6
GND 7
Y SENS 8
TO
FP-49 BOARD
W691
(See Page4-7)
JL751
JL752
JL753
JL754
JL755
R775 22k
R776 22k
R777 22k
C773 0.22 B:3216
C772 0.1 B:2125
C771 0.015 B
R771 33
C793 10 6.3V :TA A
C794 0.1 F
R772 22k
R773 22k
R774 22k
C790 0.22 B:3216
C788 0.1 B:2125
C789 0.015 B
(E-10)
IC775
BUFFER
IC775 TA75W01FU-TE12R
R781 10k
C774 33 10V :BP
C775 33 10V :BP
R778 10k
(STEADY SHOT model)
VC-161 BOARD(4/4)
21
6Vp-p
14.187 MHz
IC776 10
22
3.2Vp-p
12 MHz
IC778 25
IC776 MB88102PF-G-BND-ER
AVRH
AN1 (Pitch)
AN2 (Yaw)
09

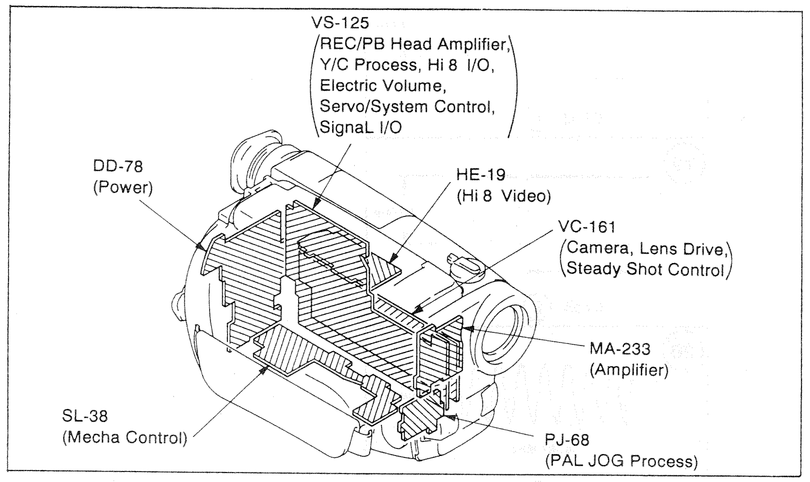
VC-161 (STEADY SHOT CONTROL) SCHEMATIC DIAGRAM (TR83/TR93/TR600/TR670/TR880) • Refer to page 4-9 for Printed Wiring Board.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
VC-161 BOARD (4/4)
(TZ BLOCK)
no mark : CAMERA REC mode
* : Can not be measured.
CN775 8P (C-10)
0.8mm pitch NON ZIF
PS IN
GND
YS IN
D5V
P SENS
GND
GND
Y SENS
TO
FP-49 BOARD
W691
(See Page4-7)
IC773
SWITCH
IC775
BUFFER
IC774
AMP
IC772
SWITCH
IC776
A/D CONVERTER
IC778
STEADY SHOT CONTROL
D5V
D3.6V
CAM GND
TO
VC-161 BOARD (1/4)
(See Page 4-14)
ZM SCK
ZM SO
CS ZTG
CS ZVIS
CL2
FLD
CGV
V RST
CINE GATE
AHD
TO
VC-161 BOARD (2/4)
(See Page 4-16)
CAM SCK
CAM SO
CAM SI
CS V MICOM
X775
12MHz
(STEADY SHOT mode)
VC-161 BOARD(4/4)
21
6Vp-p
14.187 MHz
IC776 ⑩
22
3.2Vp-p
12 MHz
IC778 ㉕
09

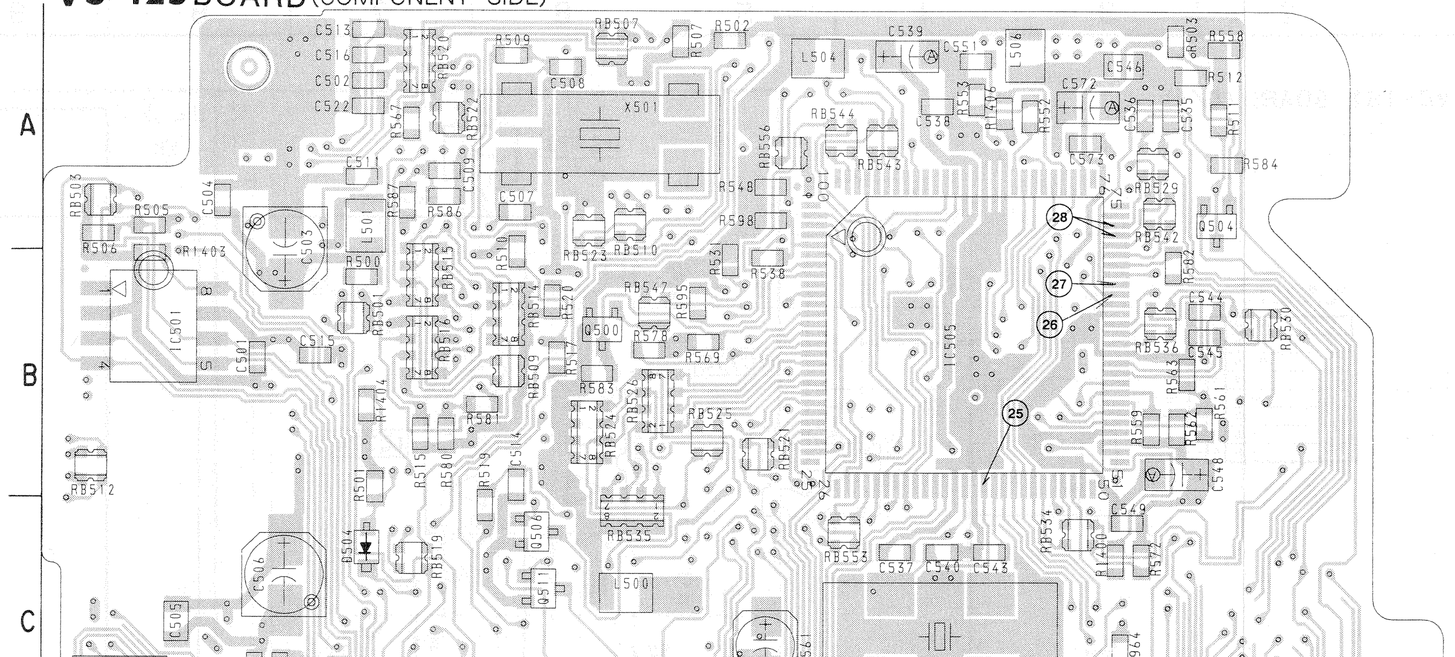
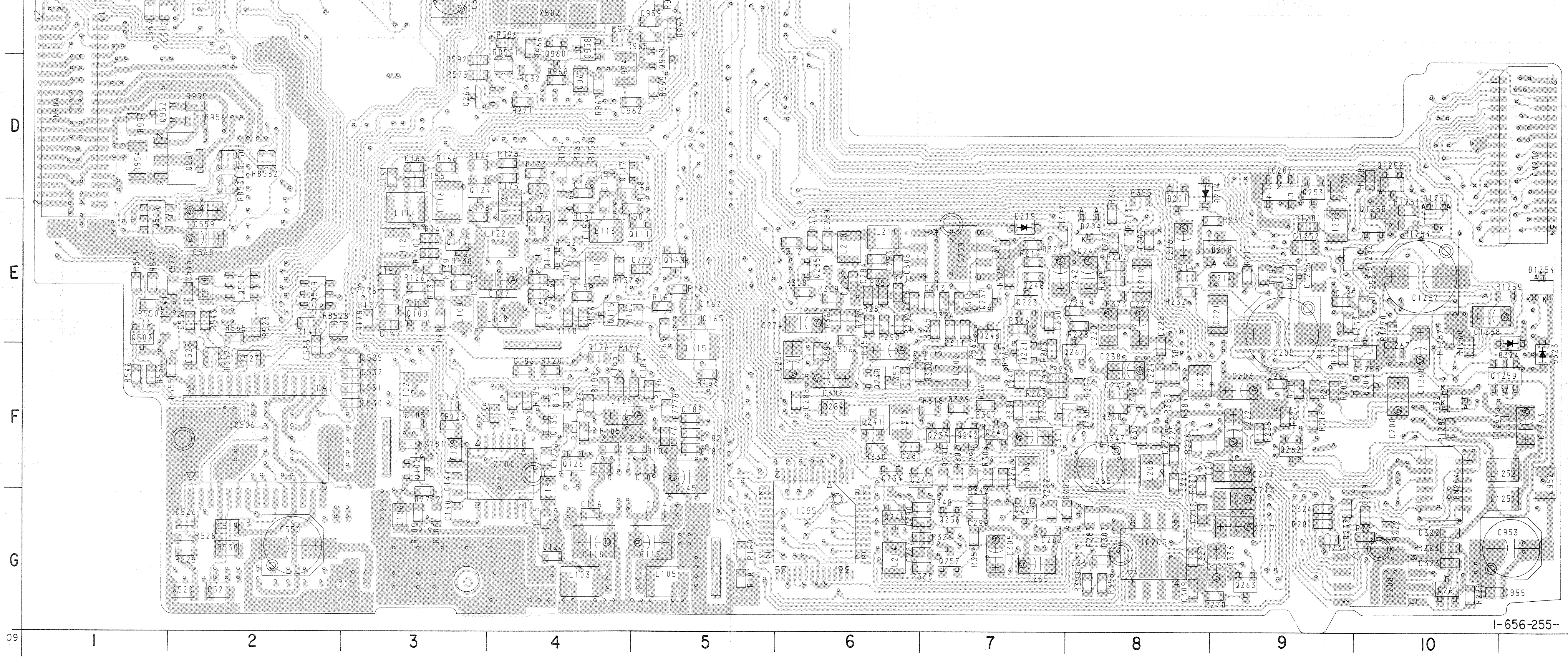
VS-125 (REC/PB HEAD AMPLIFIER, Y/C PROCESS, Hi8 I/O, ELECTRIC VOLUME, SERVO/SYSTEM CONTROL, SIGNAL I/O) PRINTED WIRING BOARD

- **For printed wiring boards.**
- VS-125 board is a four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- Chip transistor

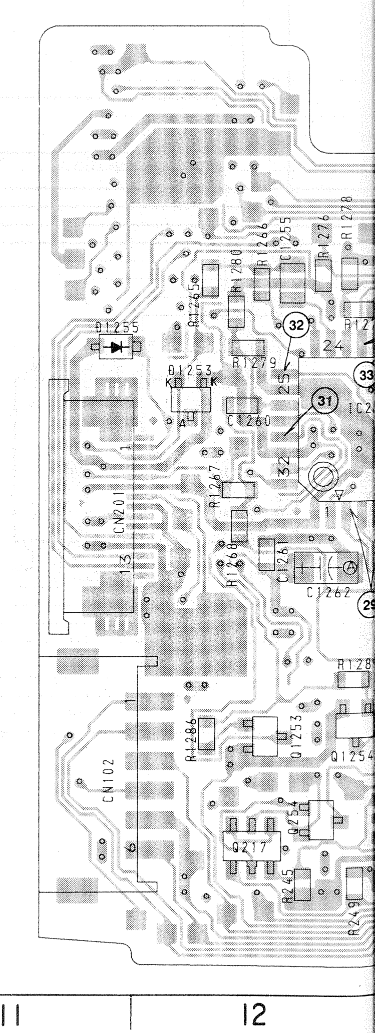

C
Q
B E
1 2 3
Q
6 5 4


VS-125
(REC/PB Head Amplifier, Y/C Process, Hi 8 I/O, Electric Volume, Servo/System Control, SignaL I/O)
DD-78
(Power)
HE-19
(Hi 8 Video)
VC-161
(Camera, Lens Drive, Steady Shot Control)
MA-233
(Amplifier)
SL-38
(Mecha Control)
PJ-68
(PAL JOG Process)

VS-125 BOARD (COMPONENT SIDE)

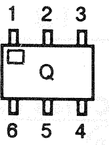


A
B
C
D
E
F
G
09
1
2
3
4
5
6
7
8
9
10
11
IC501
IC505
IC506
IC101
IC951
IC209
IC205
X501
X502
CN504
CN202
CN204
25
26
27
28
1-656-255-

VS-125 BOARD(CON


CN201
CN102
31
32
33
12

VIDEO, SERVO/SYSCON, SIGNAL I/O

int board. However, the patterns
ncluded in the diagram.



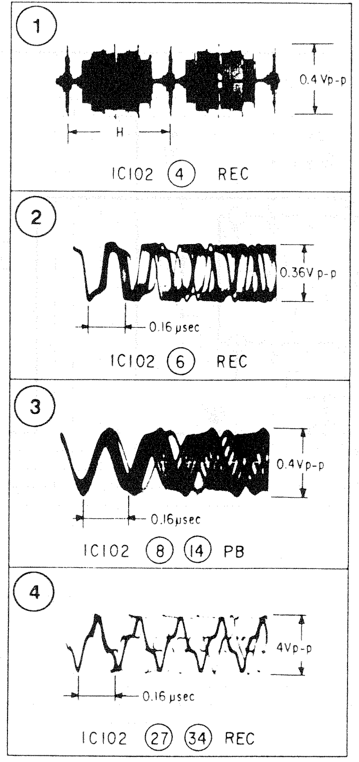
C-161
amera, Lens Drive,
teady Shot Control)

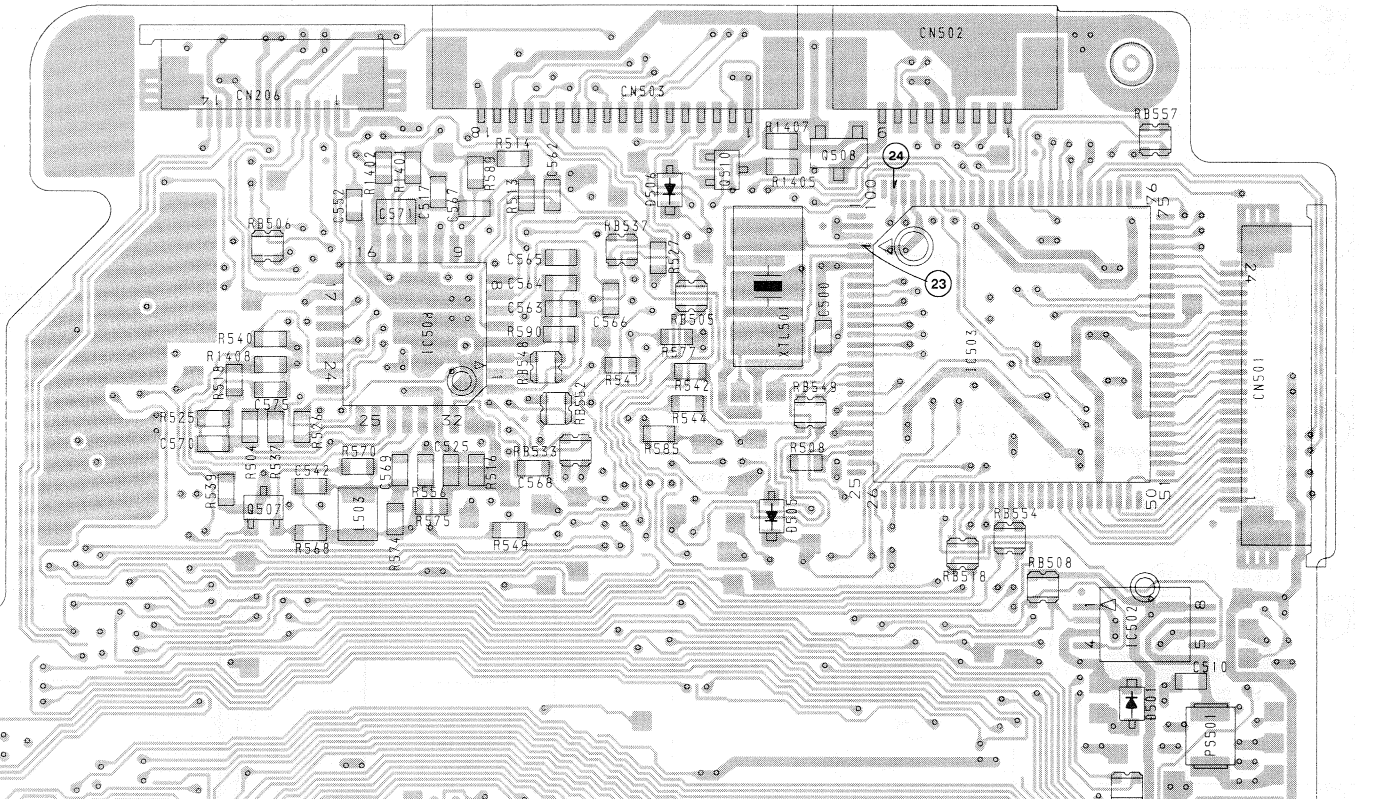
MA-233
(Amplifier)

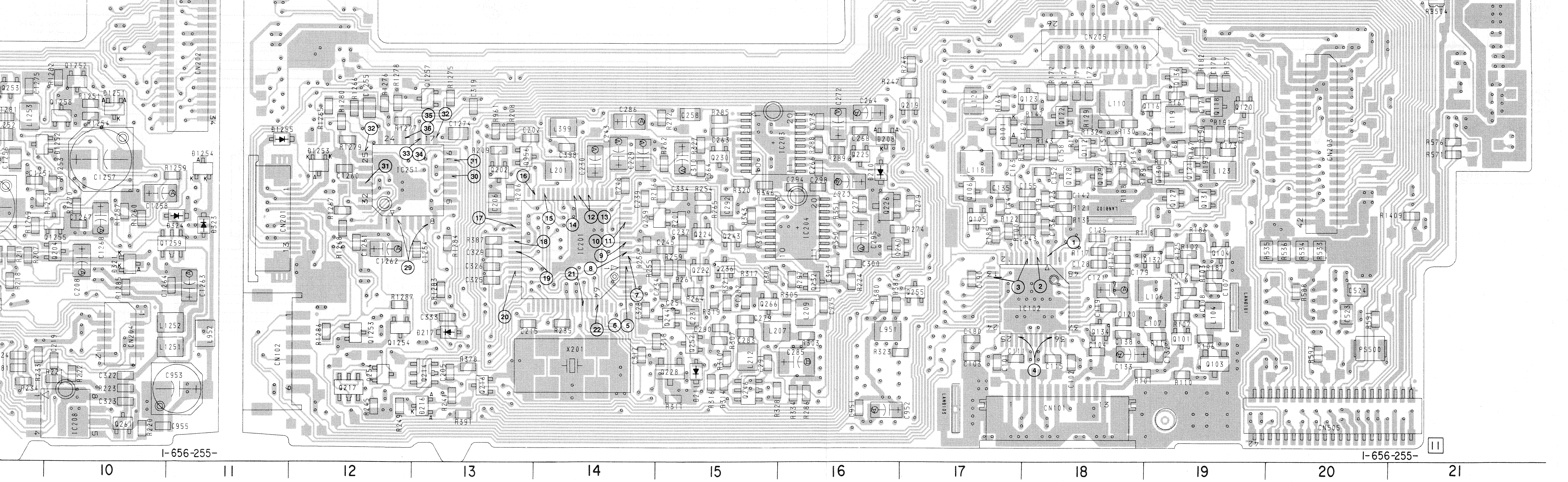
8
JOG Process)

VS-125 BOARD (CONDUCTOR SIDE)

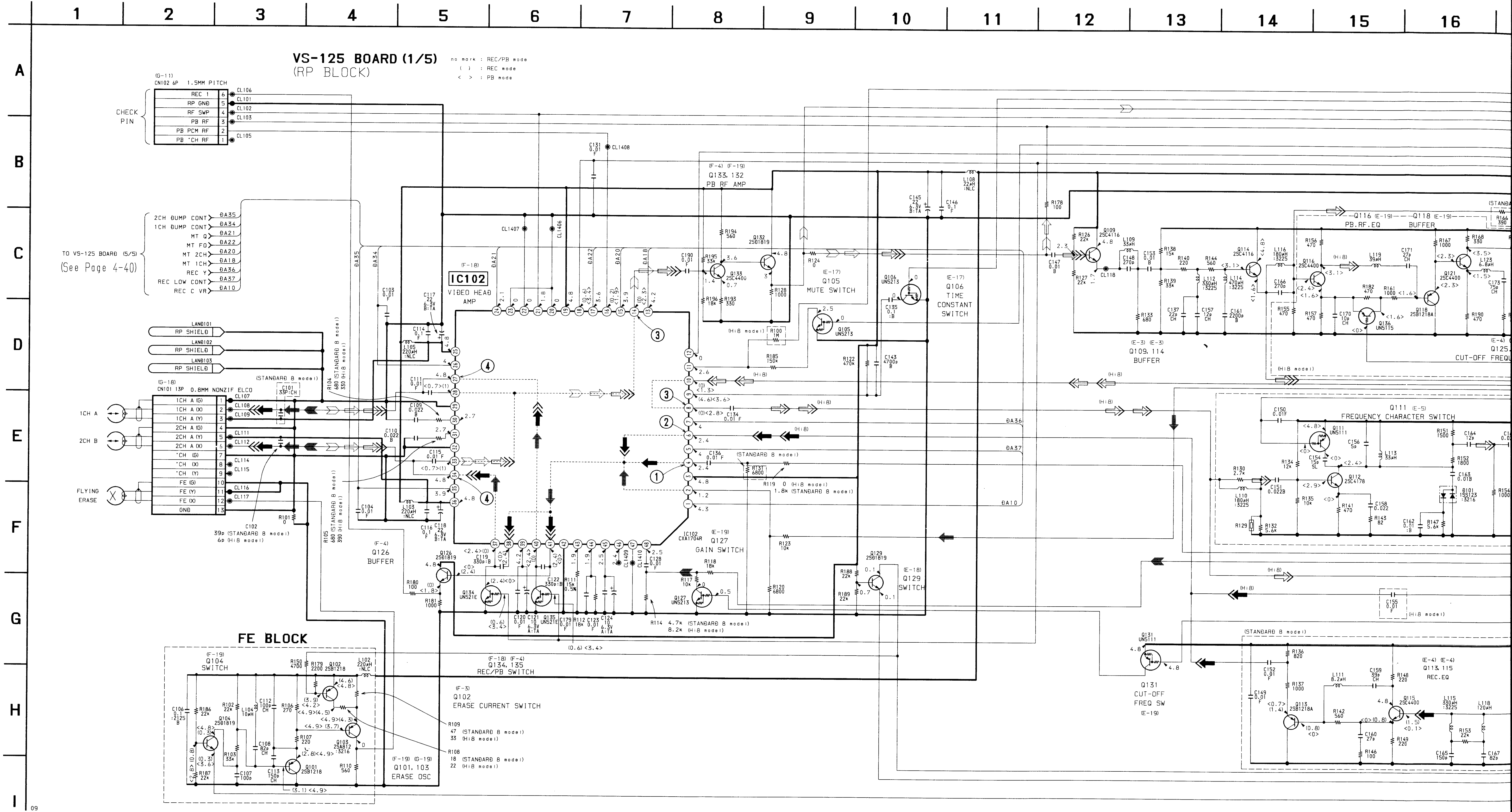
VS-125 BOARD (1/5)




CN206
CN503
CN502
CN501
IC503
IC504
IC502
X1501
PS501
D501
C510
R8557
R8554
R8508
R8504
㉓
㉔


CN202
CN201
CN102
CN204
CN205
CN203
CN101
CN505
IC1251
IC201
IC202
IC203
IC204
IC102
IC208
X201
L1251
L1252
L952
C953
PS500
1-656-255-
1-656-255-
11
10
11
12
13
14
15
16
17
18
19
20
21

VS-125 (REC/PB HEAD AMPLIFIER) SCHEMATIC DIAGRAM

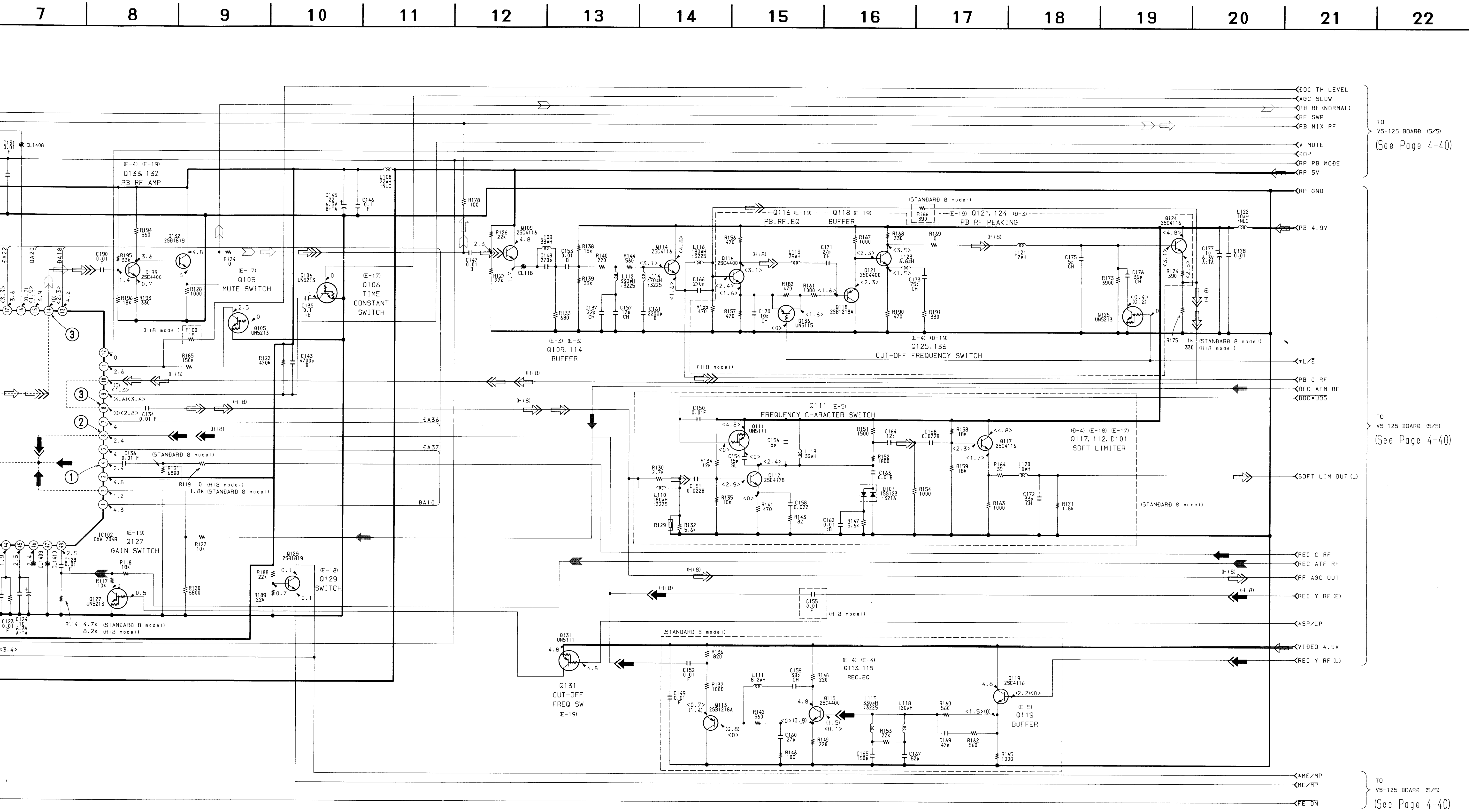

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
VS-125 BOARD (1/5)
(RP BLOCK)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
(G-11)
CN102 6P 1.5MM PITCH
REC 1
RP GND
RF SWP
PB RF
PB PCM RF
PB 'CH RF
CHECK PIN
CL106
CL101
CL102
CL103
CL105
2CH BUMP CONT
1CH BUMP CONT
MT Q
MT FO
MT 2CH
MT 1CH
REC Y
REC LOW CONT
REC C VR
TO VS-125 BOARD (5/5)
(See Page 4-40)
LAND101 RP SHIELD
LAND102 RP SHIELD
LAND103 RP SHIELD
(G-18)
CN101 13P 0.8MM NONZIF ELCO
1CH A (G)
1CH A (X)
1CH A (Y)
2CH A (G)
2CH A (Y)
2CH A (X)
'CH (G)
'CH (X)
'CH (Y)
FE (G)
FE (Y)
FE (X)
GND
1CH A
2CH B
FLYING ERASE
IC102
VIDEO HEAD AMP
IC102 CXA1704R
Q127 GAIN SWITCH
Q133, 132 PB RF AMP
Q105 MUTE SWITCH
Q106 TIME CONSTANT SWITCH
Q126 BUFFER
Q129 SWITCH
Q109, 114 BUFFER
Q116 PB.RF.EQ
Q118 BUFFER
Q111 FREQUENCY CHARACTER SWITCH
Q131 CUT-OFF FREQ SW
Q113, 115 REC.EQ
Q125 CUT-OFF FREQ
Q134, 135 REC/PB SWITCH
FE BLOCK
Q104 SWITCH
Q102 ERASE CURRENT SWITCH
Q101, 103 ERASE OSC
(STANDARD 8 model)
(Hi8 model)

•SIGNAL PATH

	VIDEO SIGNAL			AUDIO
	CHROMA	Y	Y/CHROMA	SIGNAL
REC	➡	➡➡	➡➡➡	➡
PB	⇨	⇨⇨	⇨⇨⇨	⇨

•SIGNAL PATH

Ref. signal


7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Q133, 132
PB RF AMP
Q105
MUTE SWITCH
Q106
TIME CONSTANT SWITCH
Q109, 114
BUFFER
Q116 (E-19)
PB.RF.EQ
Q118 (E-19)
BUFFER
Q121, 124 (D-3)
PB RF PEAKING
Q125, 136
CUT-OFF FREQUENCY SWITCH
Q111 (E-5)
FREQUENCY CHARACTER SWITCH
Q117, 112, D101
SOFT LIMITER
IC102
CXA1704R
Q127
GAIN SWITCH
Q129
SWITCH
Q131
CUT-OFF FREQ SW
Q113, 115
REC.EQ
Q119
BUFFER
(STANDARD 8 model)
(Hi8 model)
DOC TH LEVEL
AGC SLOW
PB RF (NORMAL)
RF SWP
PB MIX RF
V MUTE
DOP
RP PB MODE
RP 5V
RP GND
PB 4.9V
*L/E
PB C RF
REC AFM RF
DOC*JOG
SOFT LIM OUT (L)
REC C RF
REC ATF RF
RF AGC OUT
REC Y RF (E)
*SP/LP
VIDEO 4.9V
REC Y RF (L)
*ME/MP
ME/MP
FE ON
TO
VS-125 BOARD (5/5)
(See Page 4-40)
TO
VS-125 BOARD (5/5)
(See Page 4-40)
TO
VS-125 BOARD (5/5)
(See Page 4-40)

·SIGNAL PATH

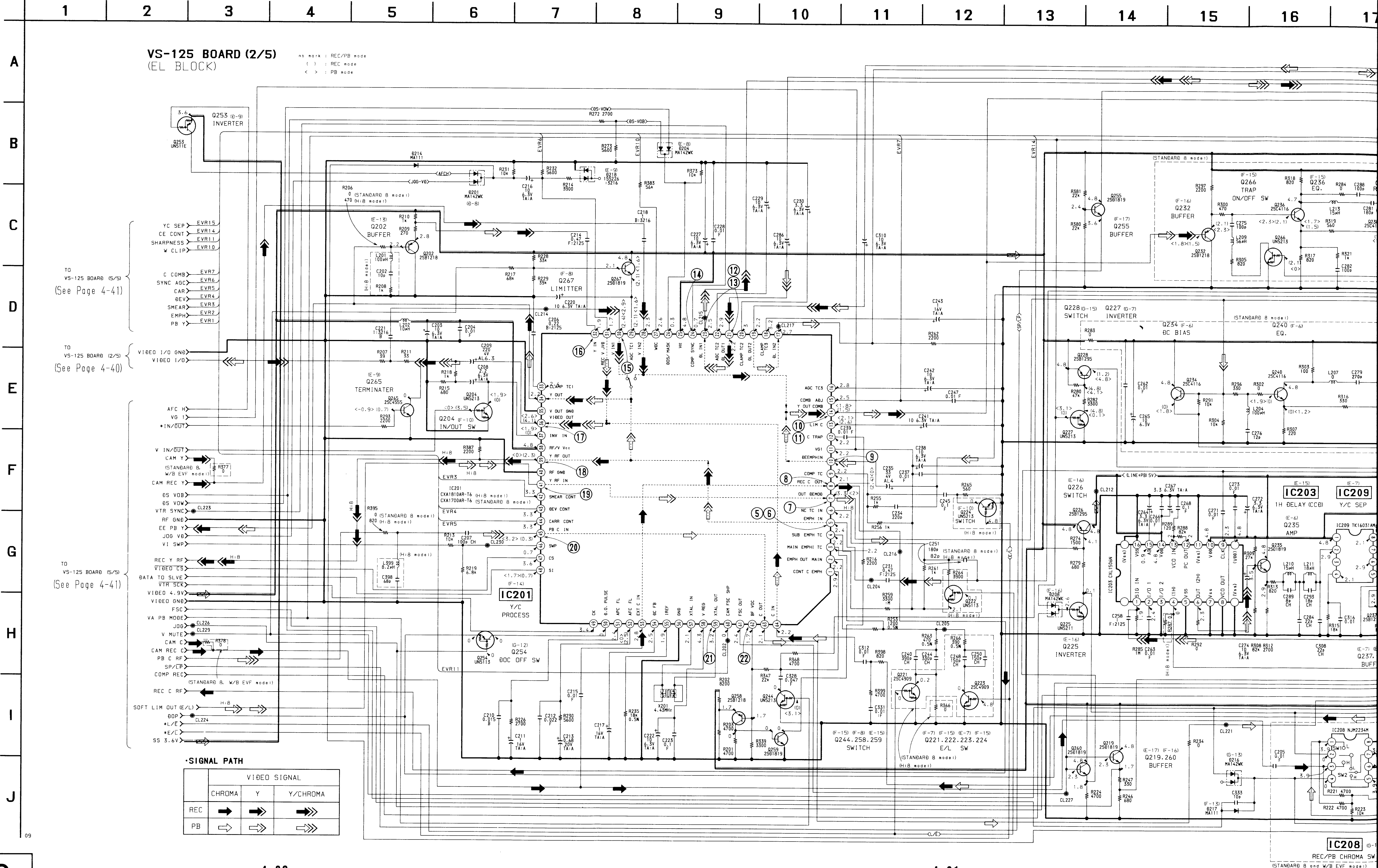
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡
PB	⇨	⇨»	⇨»»	⇨

·SIGNAL PATH

	REC	REC/PB	PB
Ref. signal	➤		▷

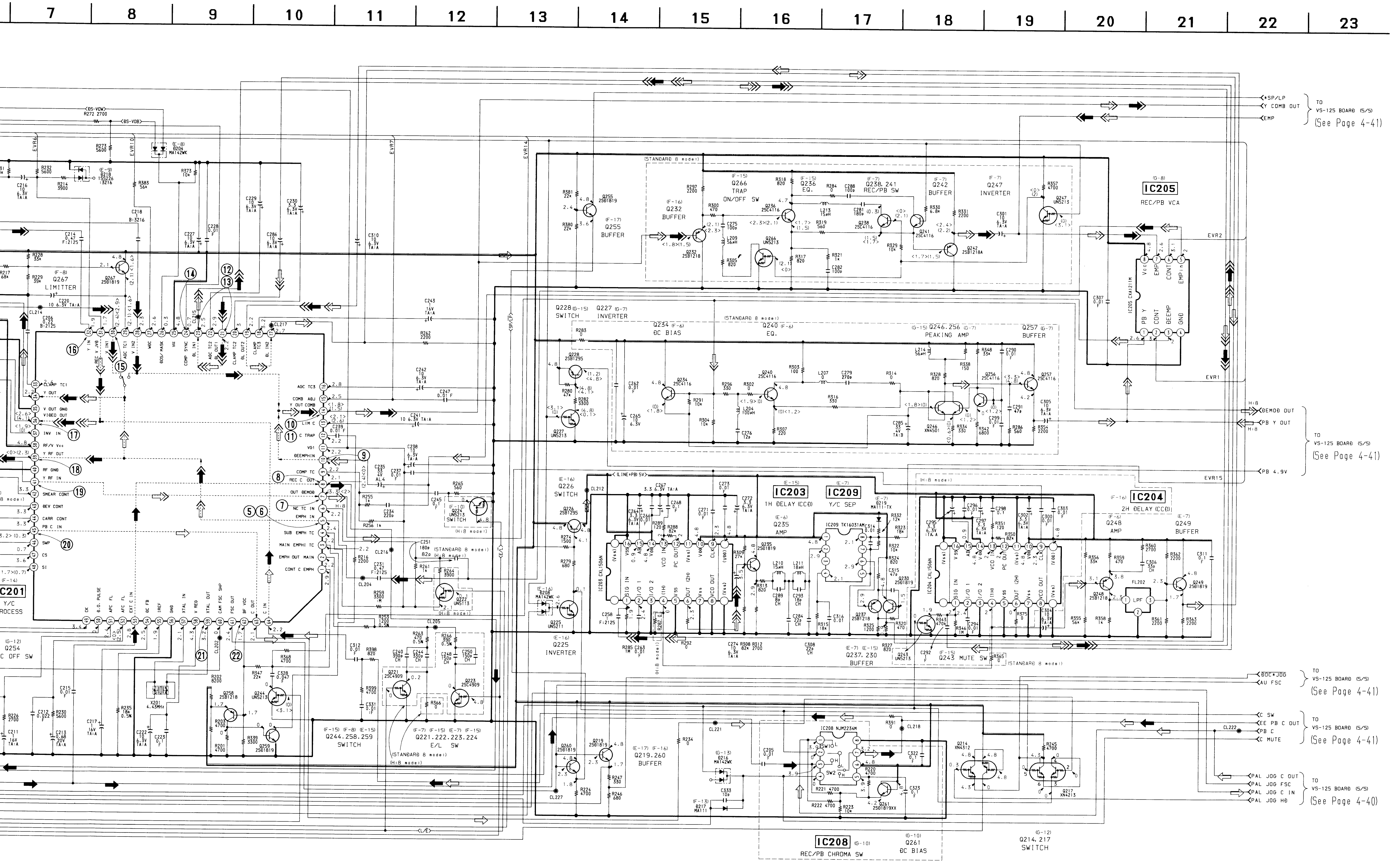
VS-125 (Y/C PROCESS) SCHEMATIC DIAGRAM

• Refer to page 4-23 for Printed Wiring Board.

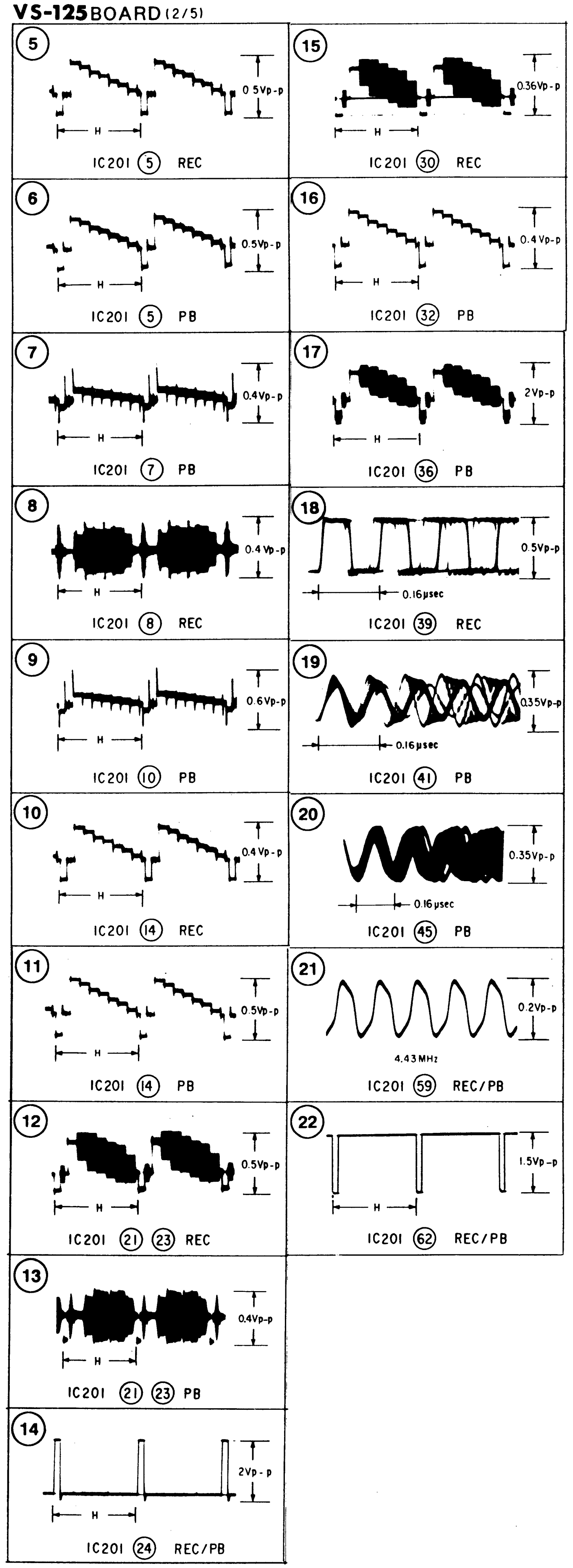

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
VS-125 BOARD (2/5)
(EL BLOCK)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
Q253 (D-9) INVERTER
Q253 UN511E
TO VS-125 BOARD (5/5) (See Page 4-41)
YC SEP
CE CONT
SHARPNESS
W CLIP
C COMB
SYNC AGC
CAR
BEV
SMEAR
EMPH
PB Y
EVR15
EVR14
EVR11
EVR10
EVR7
EVR6
EVR5
EVR4
EVR3
EVR2
EVR1
TO VS-125 BOARD (2/5) (See Page 4-40)
VIDEO I/O GND
VIDEO I/O
AFC H
VG 1
*IN/OUT
V IN/OUT
CAM Y
(STANDARD & W/B EVF model)
CAM REC Y
BS VOB
BS VOW
VTR SYNC
RF GND
EE PB Y
JOG V0
VI SWP
REC Y RF
VIDEO CS
DATA TO SLVE
VTR SCK
VIDEO 4.9V
VIDEO GND
FSC
VA PB MODE
JOG
V MUTE
CAM C
CAM REC C
PB C RF
SP/LP
COMP REC
REC C RF
SOFT LIM OUT (E/L)
BOP
*L/E
*E/C
SS 3.6V
TO VS-125 BOARD (5/5) (See Page 4-41)
Q202 BUFFER
Q202 2SB1218
Q265 TERMINATER
Q265 2SC4555
Q204 (F-10) IN/OUT SW
Q204 UN5213
Q267 (F-8) LIMITTER
Q267 2SD1819
D214 MA111
D201 MA142WK
D218 1SS226
D204 MA142WK
IC201 CXA1810AR-T6 (Hi8 model) CXA1700AR-T6 (STANDARD 8 model)
IC201 Y/C PROCESS
Q254 (G-12) BOC OFF SW
Q254 UN5113
X201 4.43MHz
Q244.258.259 SWITCH
Q221.222.223.224 E/L SW
Q228 (G-15) SWITCH
Q227 (G-7) INVERTER
Q234 (F-6) BC BIAS
Q240 (F-6) EQ.
Q226 SWITCH
Q225 INVERTER
Q266 TRAP ON/OFF SW
Q236 EQ.
Q232 BUFFER
Q255 BUFFER
Q219.260 BUFFER
IC203 1H DELAY (CCD)
IC203 CXL1506N
IC209 Y/C SEP
IC209 TK16031AM
Q235 AMP
IC208 NJM2234M
IC208 REC/PB CHROMA SW
(STANDARD 8 and W/B EVF model)
D217 MA111
D216 MA142WK
<DS-VOW>
<DS-VOB>
<AFCH>
<JOG-V0>
<SP/LP>
<E/L>
<L/E>
<LINE+PBI 5V>
(STANDARD 8 model)
(Hi8 model)
EVR6
EVR10
EVR7
EVR14
EVR3
EVR4
EVR5
EVR11
Y IN
REC V JVR
AGC TC1
V IN2
WDC
BOS/MASK
VCC
COMP SYNC
BL IN1
AGC TC2
BL OUT1
CLAMP TC2
BL OUT2
CLAMP IN
BL IN2
CLAMP TC1
Y OUT
V OUT GND
VIDEO OUT
INV IN
RF/V Vcc
Y RF OUT
RF GND
Y RF IN
SMEAR CONT
BEV CONT
CARR CONT
PB C IN
SWP
CS
SI
CK
D.O. PULSE
APC FL
AFC FL
EXT C IN
BC FB
GND
IREF
XTAL IN
V REG
XTAL OUT
CAM FSC SHP
FSC OUT
BF VOC
C OUT
C IN
AGC TC3
COMB ADJ
Y OUT COMB
LIM C
C TRAP
VG1
DEEMPHIN
COMP TC
REC C OUT
OUT DEMOD
NC TC IN
EMPH IN
SUB EMPH TC
MAIN EMPHI TC
EMPH OUT MAIN
CONT C EMPH
①
⑤⑥
⑦
⑧
⑨
⑩
⑪
⑫
⑬
⑭
⑮
⑯
⑰
⑱
⑲
⑳
㉑
㉒

·SIGNAL PATH

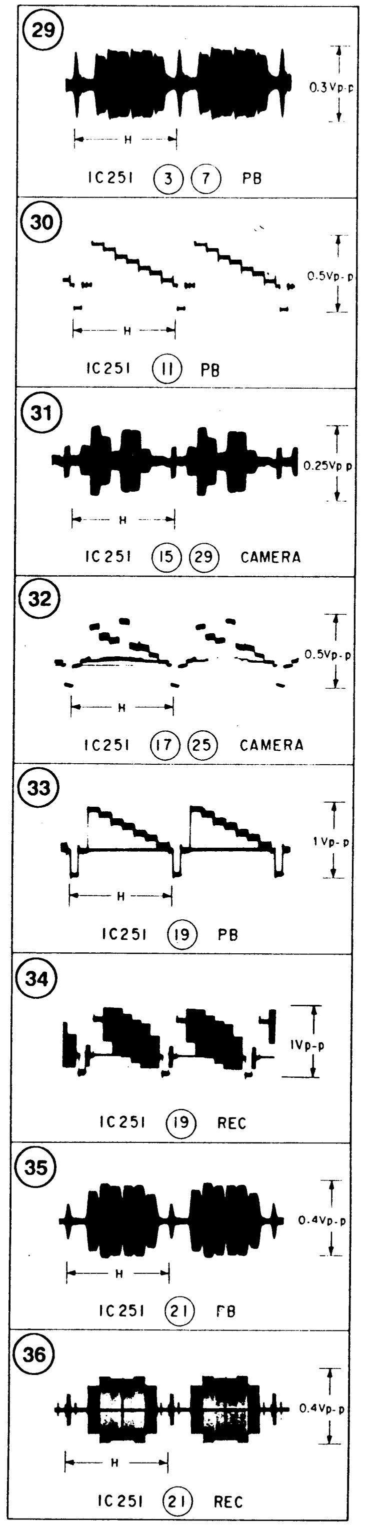
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡➡	➡➡➡
PB	⇨	⇨⇨	⇨⇨⇨


7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
IC205
REC/PB VCA
IC205 CXA1211M
Q266 TRAP ON/OFF SW
Q236 EQ.
Q238, 241 REC/PB SW
Q242 BUFFER
Q247 INVERTER
Q232 BUFFER
Q255 BUFFER
Q267 LIMITTER
Q228 SWITCH
Q227 INVERTER
Q234 DC BIAS
Q240 EQ.
Q246, 256 PEAKING AMP
Q257 BUFFER
(STANDARD 8 model)
Q226 SWITCH
Q225 INVERTER
IC203
1H DELAY (CCD)
IC209
Y/C SEP
Q235 AMP
IC204
2H DELAY (CCD)
Q248 AMP
Q249 BUFFER
Q237, 230 BUFFER
Q243 MUTE SW
IC201
Y/C PROCESS
Q254 C OFF SW
Q244, 258, 259 SWITCH
Q221, 222, 223, 224 E/L SW
Q219, 260 BUFFER
IC208
REC/PB CHROMA SW
(STANDARD 8 and W/B EVF model)
Q261 DC BIAS
Q214, 217 SWITCH
SP/LP
Y COMB OUT
EMP
TO VS-125 BOARD (5/5)
(See Page 4-41)
DEMOD OUT
PB Y OUT
PB 4.9V
DOC+JOG
AU FSC
C SW
EE PB C OUT
PB C
C MUTE
PAL JOG C OUT
PAL JOG FSC
PAL JOG C IN
PAL JOG HD
(See Page 4-40)
EVR2
EVR1
EVR15
EVR6
EVR10
EVR7
EVR14

VS-125BOARD (2/5)

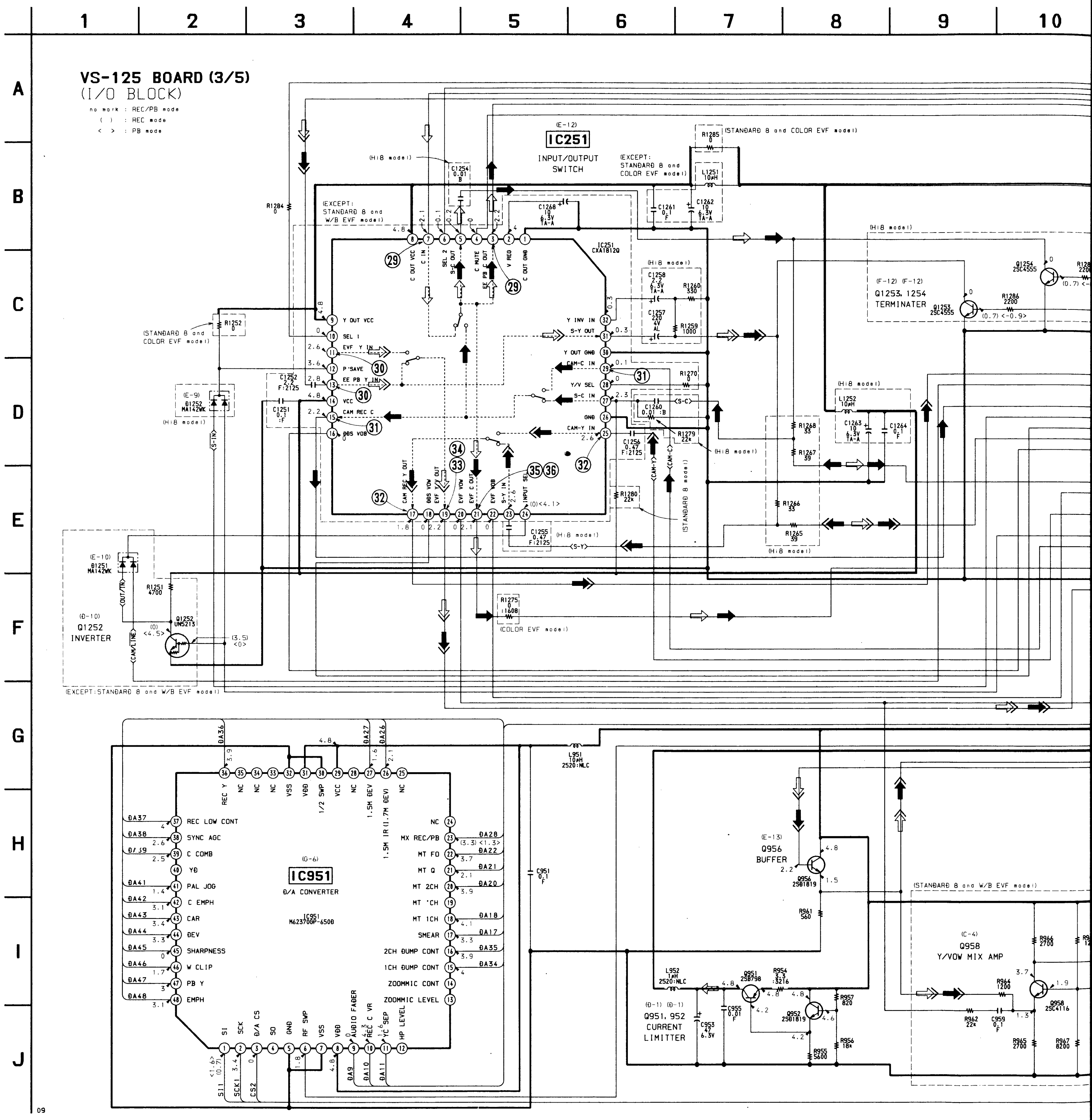


VS-125BOARD (3/5)



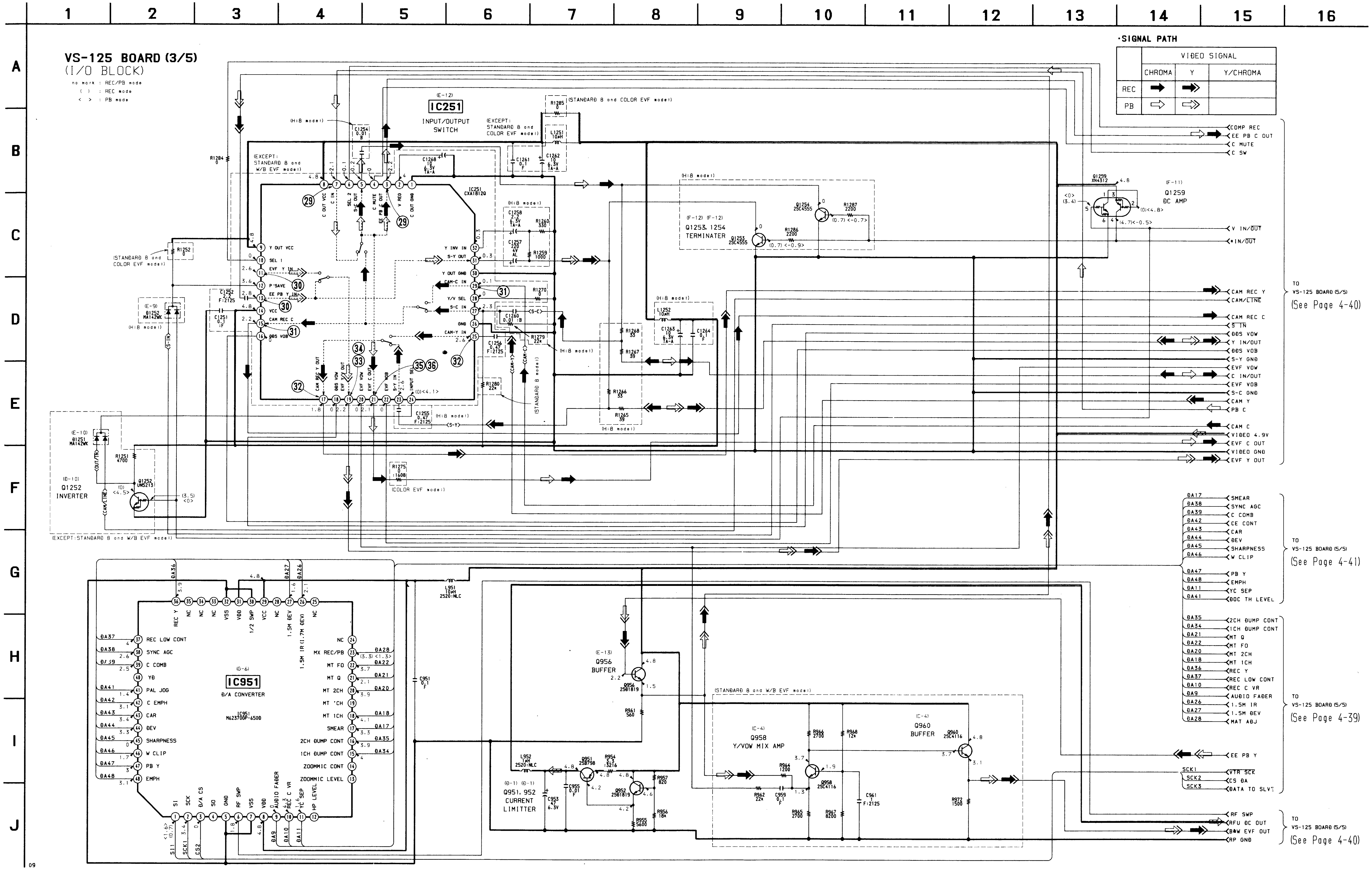
VS-125 (Hi8 I/O, ELECTRIC VOLUME) SCHEMATIC DIAGRAM

- Refer to page 4-23 for Printed Wiring Board.


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
I
J
VS-125 BOARD (3/5)
(I/O BLOCK)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
(E-12)
IC251
INPUT/OUTPUT SWITCH
IC251 CXA1812Q
(EXCEPT: STANDARD 8 and COLOR EVF model)
(STANDARD 8 and COLOR EVF model)
(EXCEPT: STANDARD 8 and W/B EVF model)
(Hi8 model)
(F-12) (F-12)
Q1253, 1254 TERMINATER
Q1254 2SC4555
Q1253 2SC4555
(E-9) D1252 MA142WK
(E-10) D1251 MA142WK
(D-10) Q1252 INVERTER
Q1252 UN5213
(COLOR EVF model)
(EXCEPT: STANDARD 8 and W/B EVF model)
(G-6)
IC951
D/A CONVERTER
IC951 M62370GP-6500
REC LOW CONT
SYNC AGC
C COMB
YD
PAL JOG
C EMPH
CAR
DEV
SHARPNESS
W CLIP
PB Y
EMPH
MX REC/PB
MT FO
MT Q
MT 2CH
MT 1CH
SMEAR
2CH DUMP CONT
1CH DUMP CONT
ZOOMMIC CONT
ZOOMMIC LEVEL
(E-13) Q956 BUFFER
Q956 2SB1819
(C-4) Q958 Y/VOW MIX AMP
Q958 2SC4116
(D-1) (D-1) Q951, 952 CURRENT LIMITTER
Q951 2SB798
Q952 2SB1819
(STANDARD 8 and W/B EVF model)
L951 10μH
L952 10μH
09

VS-125 (Hi8 I/O, ELECTRIC VOLUME) SCHEMATIC DIAGRAM

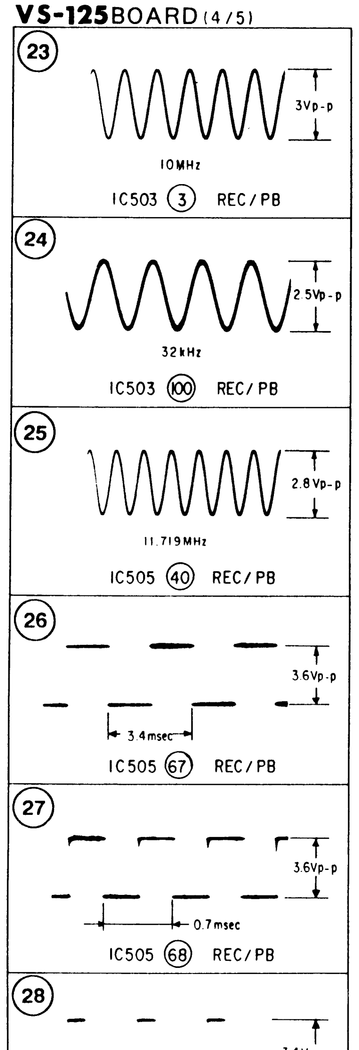
- Refer to page 4-23 for Printed Wiring Board.

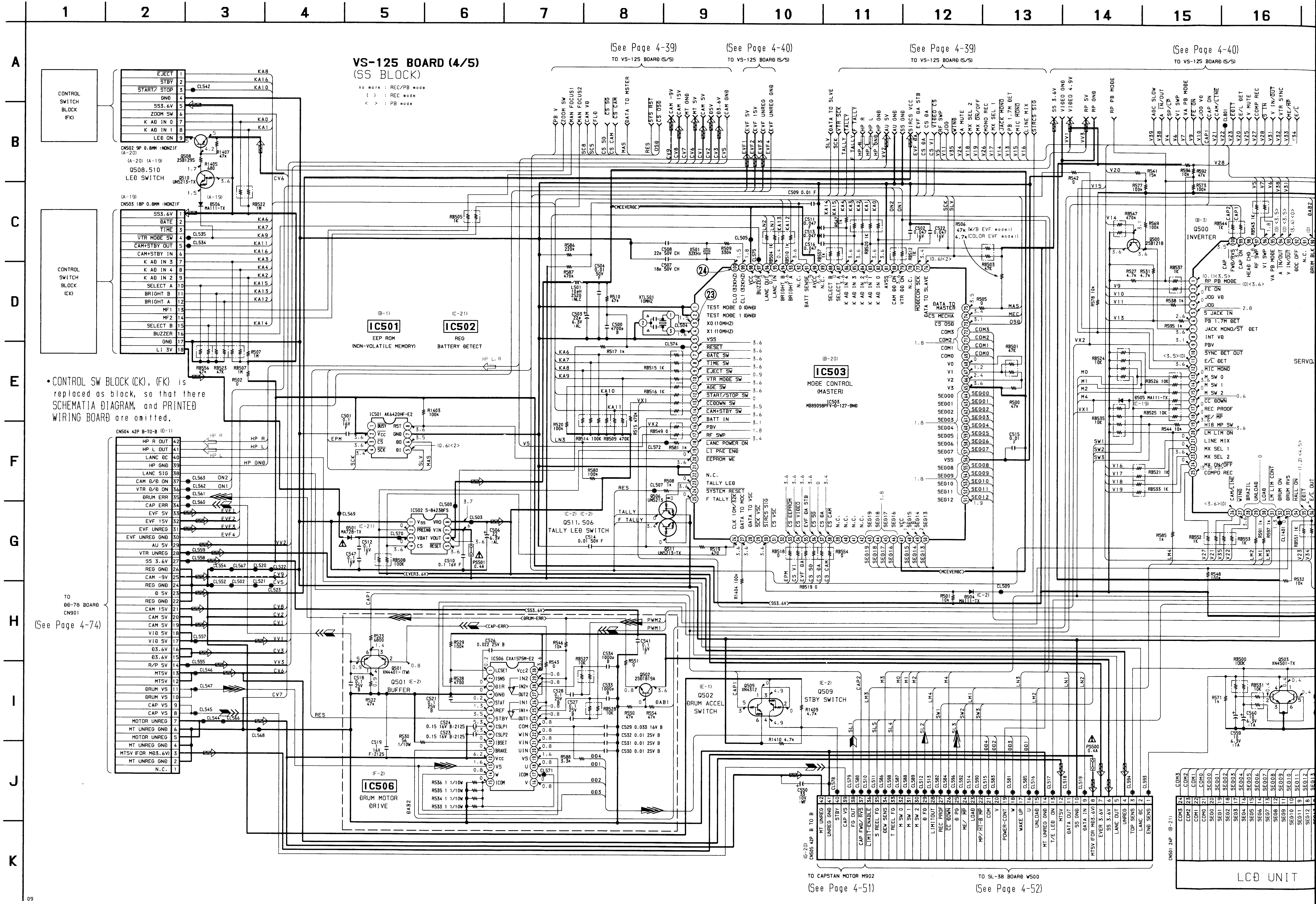


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J
VS-125 BOARD (3/5)
(I/O BLOCK)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
·SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
IC251
INPUT/OUTPUT SWITCH
IC251 CXA1812Q
(EXCEPT: STANDARD 8 and COLOR EVF model)
(STANDARD 8 and COLOR EVF model)
(EXCEPT: STANDARD 8 and W/B EVF model)
(Hi8 model)
Q1259 DC AMP
Q1253, 1254 TERMINATER
Q1252 INVERTER
D1251 MA142WK
D1252 MA142WK
(COLOR EVF model)
IC951
D/A CONVERTER
IC951 M62370OP-650O
L951 10μH
Q956 BUFFER
Q951, 952 CURRENT LIMITTER
Q958 Y/VOW MIX AMP
Q960 BUFFER
(STANDARD 8 and W/B EVF model)
COMP REC
EE PB C OUT
C MUTE
C SW
V IN/OUT
*IN/OUT
CAM REC Y
CAM/LINE
CAM REC C
S IN
OBS VOW
Y IN/OUT
OBS VOB
S-Y GND
EVF VOW
C IN/OUT
EVF VOB
S-C GND
CAM Y
PB C
CAM C
VIDEO 4.9V
EVF C OUT
VIDEO GND
EVF Y OUT
TO VS-125 BOARD (5/5) (See Page 4-40)
SMEAR
SYNC AGC
C COMB
CE CONT
CAR
DEV
SHARPNESS
W CLIP
PB Y
EMPH
YC SEP
DDC TH LEVEL
TO VS-125 BOARD (5/5) (See Page 4-41)
2CH DUMP CONT
1CH DUMP CONT
MT Q
MT FO
MT 2CH
MT 1CH
REC Y
REC LOW CONT
REC C VR
AUDIO FADER
1.5M IR
1.5M DEV
MAT ADJ
TO VS-125 BOARD (5/5) (See Page 4-39)
EE PB Y
VTR SCK
CS DA
DATA TO SLV
RF SWP
RFU DC OUT
B&W EVF OUT
RP GND
TO VS-125 BOARD (5/5) (See Page 4-40)

VS-125 (SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAM

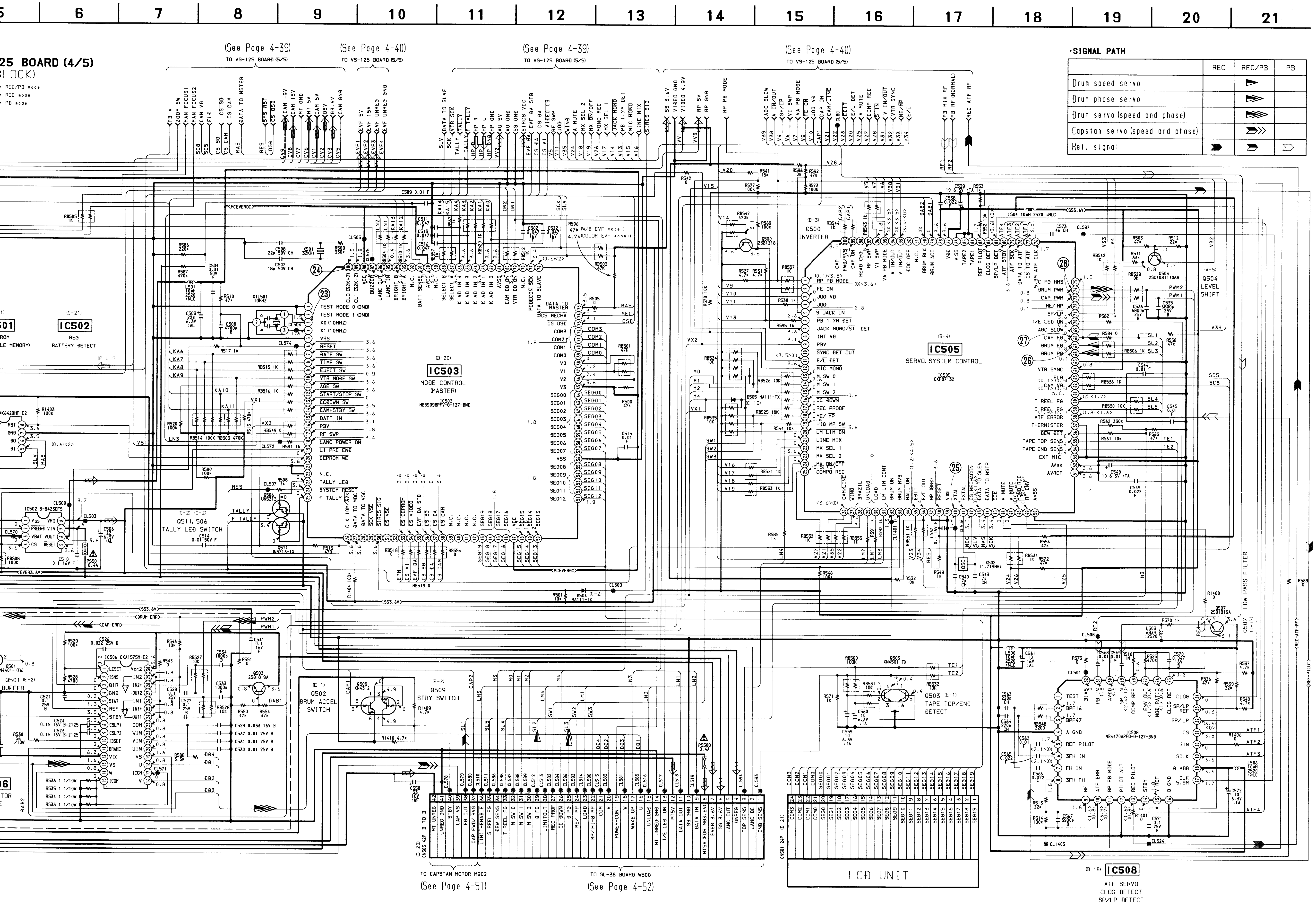
• Refer to page 4–23 for Printed Wiring Board.


VS-125BOARD (4/5)
㉓
3Vp-p
10MHz
IC503 ③ REC/PB
㉔
2.5Vp-p
32kHz
IC503 ⑩⓪ REC/PB
㉕
2.8Vp-p
11.719MHz
IC505 ㊵ REC/PB
㉖
3.6Vp-p
3.4msec
IC505 (67) REC/PB
㉗
3.6Vp-p
0.7msec
IC505 (68) REC/PB
㉘
3.4Vp-p
2.2μsec
IC505 (73) (74) REC/PB


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
K
VS-125 BOARD (4/5)
(SS BLOCK)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
(See Page 4-39)
TO VS-125 BOARD (5/5)
(See Page 4-40)
TO VS-125 BOARD (5/5)
(See Page 4-39)
TO VS-125 BOARD (5/5)
(See Page 4-40)
TO VS-125 BOARD (5/5)
CONTROL SWITCH BLOCK (FK)
CONTROL SWITCH BLOCK (CK)
CN502 9P 0.8MM :NONZIF
CN503 18P 0.8MM :NONZIF
Q508,510 LED SWITCH
IC501
EEP ROM
(NON-VOLATILE MEMORY)
IC502
REG
BATTERY DETECT
IC503
MODE CONTROL
(MASTER)
MB89098PFV-G-127-BND
Q500
INVERTER
CN504 42P B-TO-B
TO DD-78 BOARD CN901
(See Page 4-74)
Q511,506
TALLY LED SWITCH
Q501
BUFFER
IC506
DRUM MOTOR DRIVE
Q502
DRUM ACCEL SWITCH
Q509
STBY SWITCH
CN505 24P B TO B
TO CAPSTAN MOTOR M902
(See Page 4-51)
TO SL-38 BOARD W500
(See Page 4-52)
CN501 24P
LCD UNIT
SERVO
09

• CONTROL SW BLOCK (CK), (FK) is replaced as block, so that there SCHEMATIA DIAGRAM, and PRINTED WIRING BOARD are omitted.

• Refer to page 4-23 for Printed Wiring Board.


5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
25 BOARD (4/5)
BLOCK)
: REC/PB mode
: REC mode
: PB mode
(See Page 4-39)
TO VS-125 BOARD (5/5)
(See Page 4-40)
TO VS-125 BOARD (5/5)
(See Page 4-39)
TO VS-125 BOARD (5/5)
(See Page 4-40)
TO VS-125 BOARD (5/5)
IC501
ROM
(E MEMORY)
IC502
REG
BATTERY DETECT
IC503
MODE CONTROL
(MASTER)
MB89098PFV-G-127-BN0
IC505
SERVO SYSTEM CONTROL
CXP87132
Q500
INVERTER
Q504
LEVEL
SHIFT
Q511, 506
TALLY LED SWITCH
Q501
BUFFER
IC506 CXA1575M-E2
Q502
DRUM ACCEL
SWITCH
Q509
STBY SWITCH
Q503
TAPE TOP/END
DETECT
Q507
LOW PASS FILTER
IC508
ATF SERVO
CLOG DETECT
SP/LP DETECT
MB4470APFG-G-127-BN0
LCD UNIT
CN505 42P B TO B
CN501 24P
TO CAPSTAN MOTOR M902
(See Page 4-51)
TO SL-38 BOARD W500
(See Page 4-52)

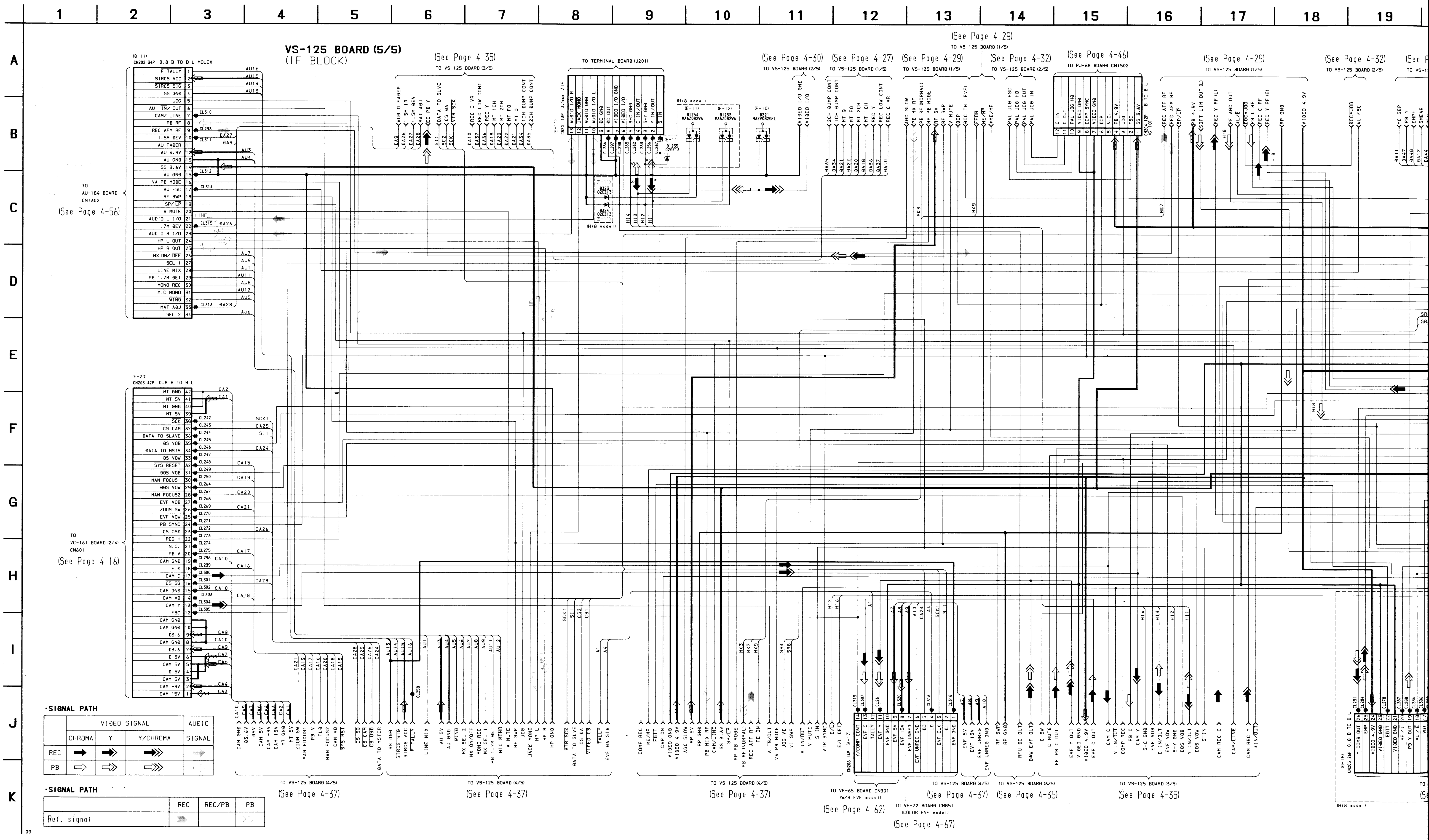
·SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷▷	
Drum servo (speed and phase)		▷▷▷	
Capstan servo (speed and phase)		▷》	
Ref. signal	▶	▷	▷

Note:
The components identified by
mark ⚠ or dotted line with
mark ⚠ are critical for safety.
Replace only with part number
specified.

VS-125 (SIGNAL I/O) SCHEMATIC DIAGRAM

- Refer to page 4-23 for Printed Wiring Board.

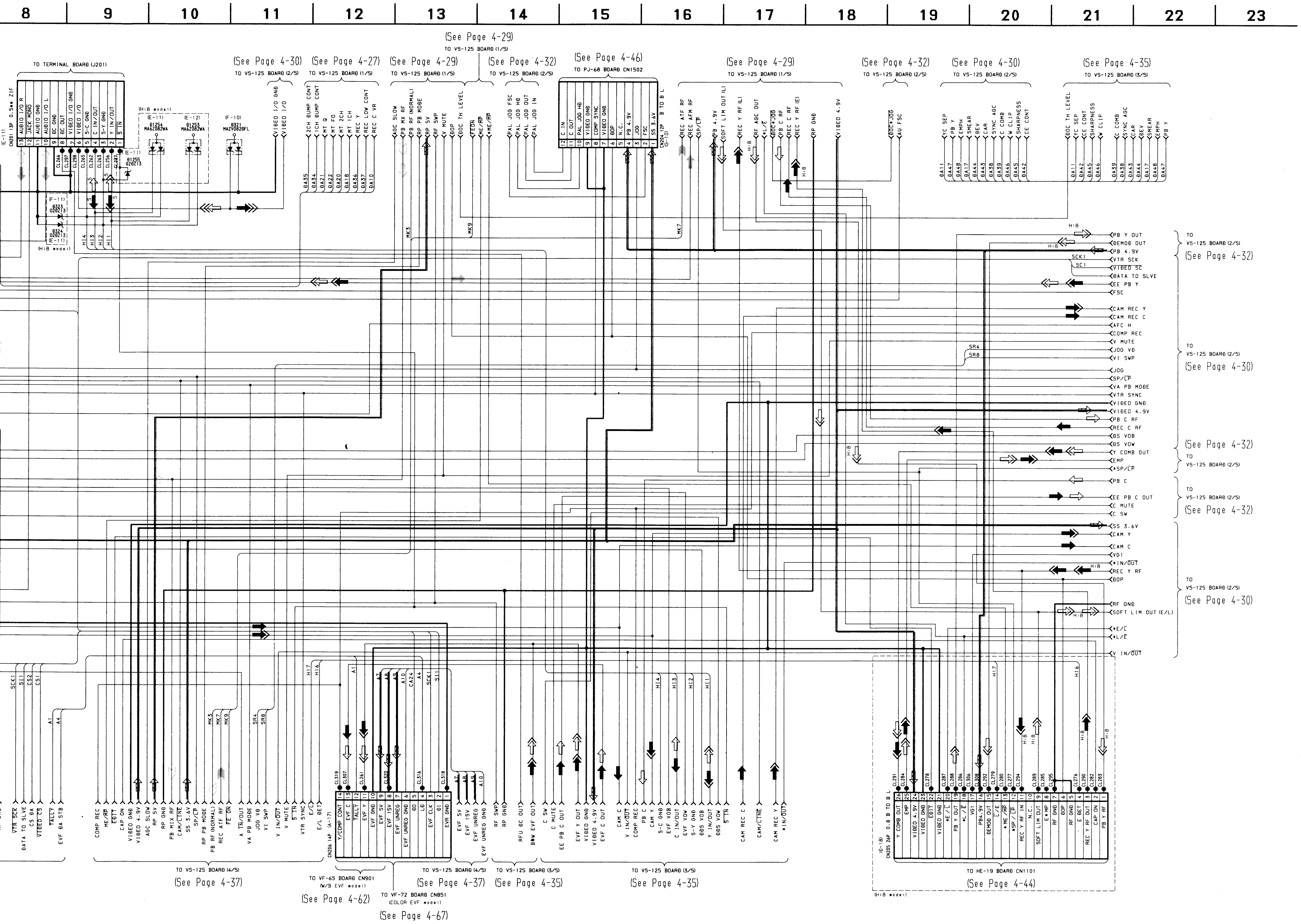

VS-125 BOARD (5/5)
(IF BLOCK)
(E-11)
CN202 34P 0.8 B TO B L MOLEX
TO
AU-184 BOARD
CN1302
(See Page 4-56)
(E-20)
CN203 42P 0.8 B TO B L
TO
VC-161 BOARD (2/4)
CN601
(See Page 4-16)
(See Page 4-35)
TO VS-125 BOARD (3/5)
TO TERMINAL BOARD (J201)
(See Page 4-30)
TO VS-125 BOARD (2/5)
(See Page 4-27)
TO VS-125 BOARD (1/5)
(See Page 4-29)
TO VS-125 BOARD (1/5)
(See Page 4-32)
TO VS-125 BOARD (2/5)
(See Page 4-46)
TO PJ-68 BOARD CN1502
(See Page 4-29)
TO VS-125 BOARD (1/5)
(See Page 4-32)
TO VS-125 BOARD (2/5)
TO VS-125 BOARD (4/5)
(See Page 4-37)
TO VS-125 BOARD (4/5)
(See Page 4-37)
TO VS-125 BOARD (4/5)
(See Page 4-37)
TO VF-65 BOARD CN901
(W/B EVF model)
(See Page 4-62)
TO VF-72 BOARD CN851
(COLOR EVF model)
(See Page 4-67)
TO VS-125 BOARD (4/5)
(See Page 4-37)
TO VS-125 BOARD (3/5)
(See Page 4-35)
TO VS-125 BOARD (3/5)
(See Page 4-35)
CN206 14P (A-17)
(Hi8 model)
D1254 MA6Z082WA
D1255 MA6Z082WA
D321 MAZV082OFL
D1256 02DZ13
D323 02DZ13
D324 02DZ13
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
A B C D E F G H I J K

·SIGNAL PATH

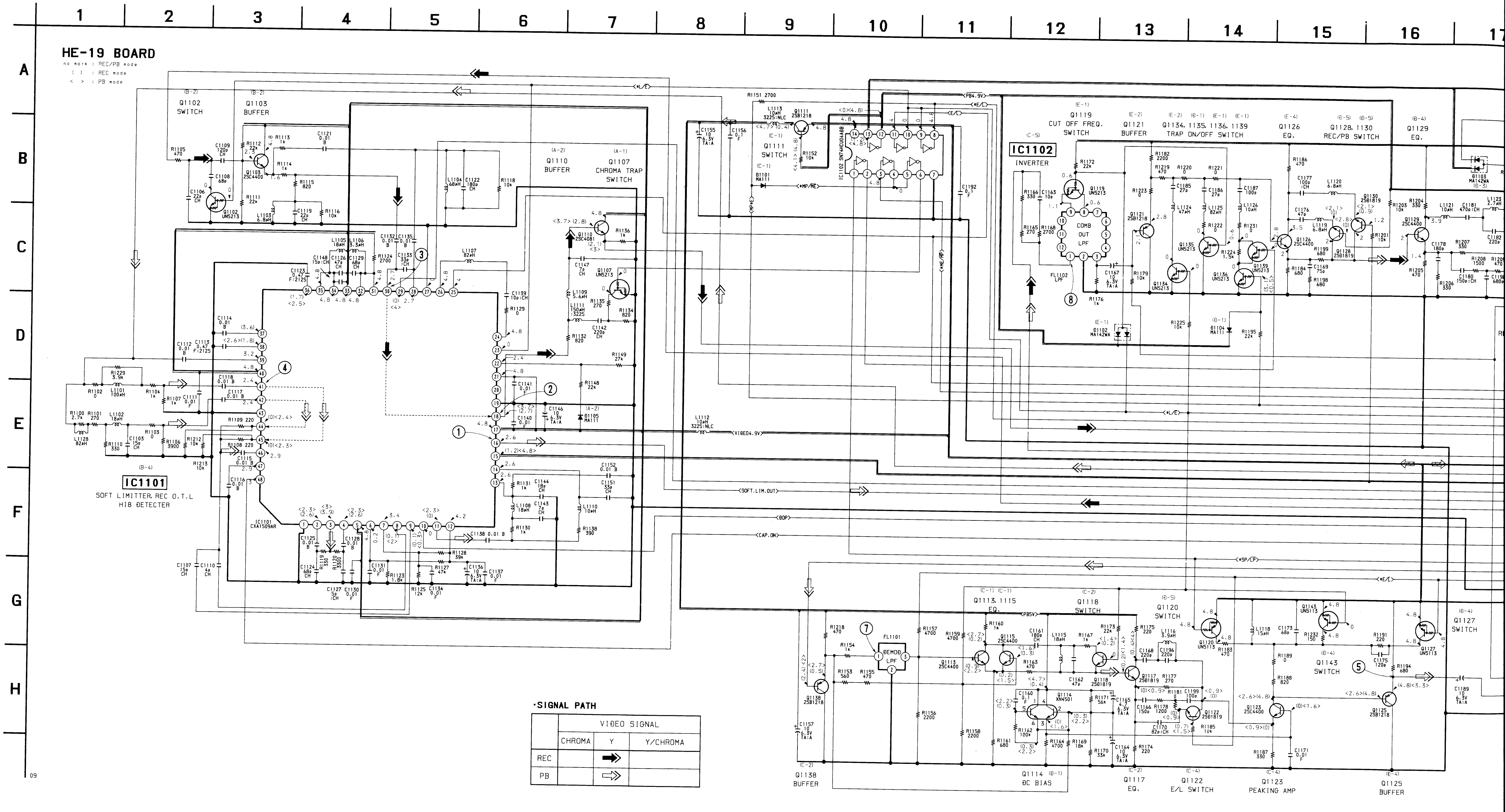
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	➡
PB	⇨	⇨	⇨	⇨

·SIGNAL PATH

	REC	REC/PB	PB
Ref. signal	➡		⇨


8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
(See Page 4-29)
TO VS-125 BOARD (1/5)
TO TERMINAL BOARD (J201)
(See Page 4-30)
TO VS-125 BOARD (2/5)
(See Page 4-27)
TO VS-125 BOARD (1/5)
(See Page 4-29)
TO VS-125 BOARD (1/5)
(See Page 4-32)
TO VS-125 BOARD (2/5)
(See Page 4-46)
TO PJ-68 BOARD CN1502
(See Page 4-29)
TO VS-125 BOARD (1/5)
(See Page 4-32)
TO VS-125 BOARD (2/5)
(See Page 4-30)
TO VS-125 BOARD (2/5)
(See Page 4-35)
TO VS-125 BOARD (3/5)
CN201 13P 0.5mm ZIF
AUDIO I/O R
JACK MONO
AUDIO GND
AUDIO I/O L
DC GND
DC OUT
VIDEO I/O GND
VIDEO I/O
S-C GND
C IN/OUT
S-Y GND
Y IN/OUT
S IN
D1254 MA4082WA
D1253 MA4082WA
D321 MAZV082DFL
D1255 02DZ13
D323 02DZ13
D324 02DZ13
(Hi8 model)
VIDEO I/O GND
VIDEO I/O
2CH BUMP CONT
1CH BUMP CONT
MT Q
MT FG
MT 2CH
MT 1CH
REC Y
REC LOW CONT
REC C VR
AGC SLOW
PB MX RF
PB RF (NORMAL)
RP PB MODE
RP 5V
RF SWP
V MUTE
DOP
DOC TH LEVEL
FEON
ME/MP
ME/MP
PAL JOG FSC
PAL JOG HD
PAL JOG OUT
PAL JOG IN
C IN
C OUT
PAL JOG HD
VIDEO GND
COMP SYNC
VIDEO GND
DOP
N.C.
PB 4.9V
JOG
FSC
SS 3.6V
CN1014 12P B TO B L
REC ATF RF
REC AFM RF
SP/LP
PB 4.9V
SOFT LIM OUT (L)
REC Y RF (L)
RF AGC OUT
L/E
DOC JOG
PB C RF
REC C RF
REC Y RF (E)
RP GND
VIDEO 4.9V
DOC JOG
AU FSC
YC SEP
PB Y
EMPH
SHEAR
DEV
CAR
SYNC AGC
C COMB
W CLIP
SHARPNESS
CE CONT
DOC TH LEVEL
YC SEP
CE CONT
SHARPNESS
W CLIP
C COMB
SYNC AGC
CAR
DEV
SHEAR
EMPH
PB Y
PB Y OUT
DEMOD OUT
PB 4.9V
VTR SCK
VIDEO SC
DATA TO SLVE
EE PB Y
FSC
CAM REC Y
CAM REC C
AFC H
COMP REC
V MUTE
JOG VD
V1 SWP
JOG
SP/LP
VA PB MODE
VTR SYNC
VIDEO GND
VIDEO 4.9V
PB C RF
REC C RF
DS VDB
DS VDW
Y COMB OUT
EMP
SP/LP
PB C
EE PB C OUT
C MUTE
C SW
SS 3.6V
CAM Y
CAM C
VG1
IN/OUT
REC Y RF
DOP
RF GND
SOFT LIM OUT (E/L)
E/C
L/E
V IN/OUT
TO VS-125 BOARD (2/5)
(See Page 4-32)
TO VS-125 BOARD (2/5)
(See Page 4-30)
(See Page 4-32)
TO VS-125 BOARD (2/5)
TO VS-125 BOARD (2/5)
(See Page 4-32)
TO VS-125 BOARD (2/5)
(See Page 4-30)
SCK1
SC1
SR4
SR8
MK3
MK7
MK9
HI1
HI2
HI3
HI4
HI6
HI7
Hi8
VTR SCK
DATA TO SLVE
CS 0A
VIDEO CS
TALLY
EVF 0A STB
COMP REC
ME/MP
EDIT
CAP ON
VIDEO GND
VIDEO 4.9V
AGC SLOW
RP 5V
RP GND
PB MIX RF
CAM/LINE
SS 3.6V
SP/LP
RP PB MODE
PB RF (NORMAL)
REC ATF RF
FE ON
A IN/OUT
VA PB MODE
JOG VD
V1 SWP
V IN/OUT
V MUTE
S IN
VTR SYNC
E/C
E/L DET
CN206 14P (A-17)
Y/COMP CONT
EVF C
TALLY
EVF Y
EVF GND
EVF 5V
EVF 15V
EVF UNREG
EVF UNREG GND
GD
LD
EVF CLK
DI
EVR GND
EVF 5V
EVF 15V
EVF UNREG
EVF UNREG GND
RF SWP
RP GND
RFU DC OUT
B&W EVF OUT
C SW
C MUTE
EE PB C OUT
EVF Y OUT
VIDEO GND
VIDEO 4.9V
EVF C OUT
CAM C
V IN/OUT
COMP REC
PB C
CAM Y
S-C GND
EVF VDB
C IN/OUT
EVF VDW
S-Y GND
DDS VDB
Y IN/OUT
DDS VDW
S IN
CAM REC C
CAM/LINE
CAM REC Y
IN/OUT
CN205 26P 0.8 B TO B L
Y COMB OUT
EMP
VIDEO 4.9V
VIDEO GND
EDIT
VIDEO GND
E/C
PB Y OUT
VG1
L/E
PB4.9V
DEMOD OUT
L/E
ME/MP
SP/LP
REC Y RF IN
N.C.
SOFT LIM OUT
E/MP
RF GND
DOP
RF GND
E RET
REC Y RF OUT
CAP ON
PB Y RF
TO VS-125 BOARD (4/5)
(See Page 4-37)
TO VF-65 BOARD CN901
(W/B EVF model)
(See Page 4-62)
TO VF-72 BOARD CN851
(COLOR EVF model)
(See Page 4-67)
TO VS-125 BOARD (4/5)
(See Page 4-37)
TO VS-125 BOARD (3/5)
(See Page 4-35)
TO VS-125 BOARD (3/5)
(See Page 4-35)
TO HE-19 BOARD CN1101
(See Page 4-44)
(Hi8 model)

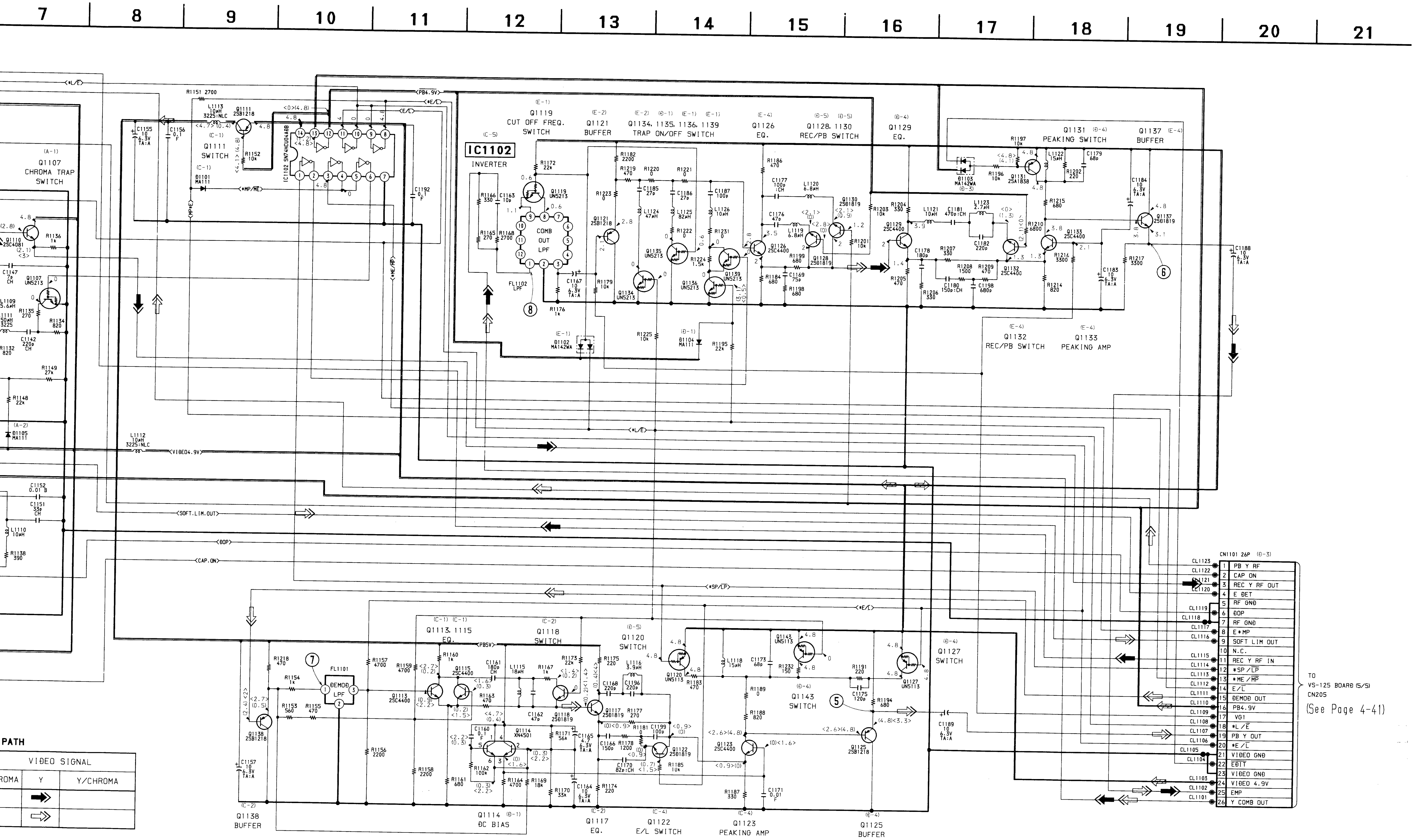
HE-19 (Hi8 VIDEO) PRINTED WIRING BOARD



HE-19 BOARD
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
Q1102 SWITCH
Q1103 BUFFER
Q1110 BUFFER
Q1107 CHROMA TRAP SWITCH
Q1111 SWITCH
IC1102 SN74HCU04ASB
Q1119 CUT OFF FREQ. SWITCH
Q1121 BUFFER
Q1134, 1135, 1136, 1139 TRAP ON/OFF SWITCH
Q1126 EQ.
Q1128, 1130 REC/PB SWITCH
Q1129 EQ.
IC1102 INVERTER
FL1102 LPF
COMB OUT LPF
IC1101 SOFT LIMITTER, REC O.T.L Hi8 DETECTER
IC1101 CXA1509AR
FL1101 DEMOD LPF
Q1113, 1115 EQ.
Q1118 SWITCH
Q1120 SWITCH
Q1143 SWITCH
Q1127 SWITCH
Q1138 BUFFER
Q1114 DC BIAS
Q1117 EQ.
Q1122 E/L SWITCH
Q1123 PEAKING AMP
Q1125 BUFFER
<*L/E>
<PB4.9V>
<*E/C>
<VIDEO4.9V>
<SOFT.LIM.OUT>
<ĐOP>
<CAP.ON>
<*SP/LP>
<PB5V>
<*MP/ME>
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H

·SIGNAL PATH

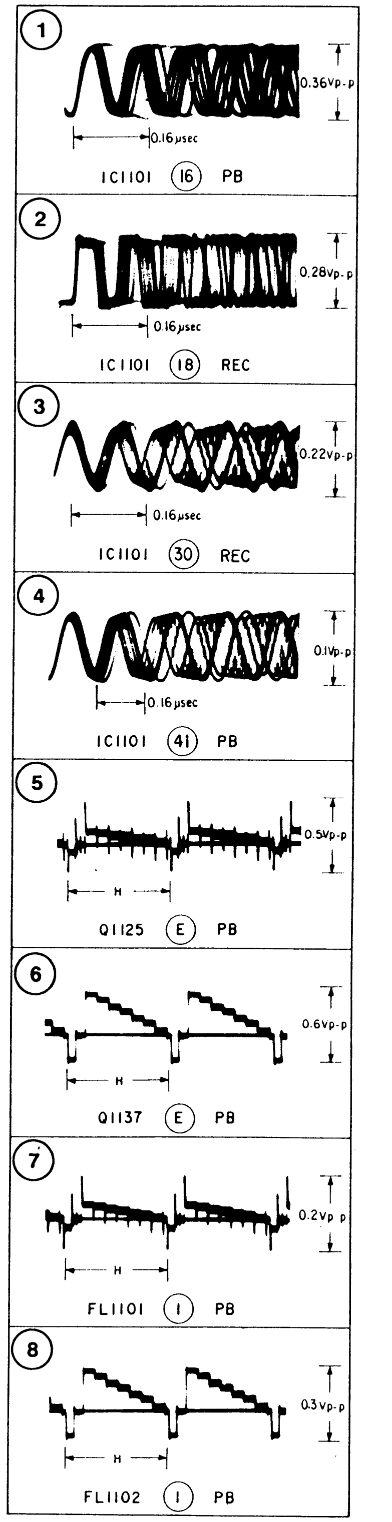
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		➡	
PB		⇨	


7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
Q1107 CHROMA TRAP SWITCH
Q1111 SWITCH
IC1102 SN74HCU04ABR
Q1119 CUT OFF FREQ. SWITCH
IC1102 INVERTER
COMB OUT LPF
FL1102 LPF
Q1121 BUFFER
Q1134, 1135, 1136, 1139 TRAP ON/OFF SWITCH
Q1126 EQ.
Q1128, 1130 REC/PB SWITCH
Q1129 EQ.
Q1131 PEAKING SWITCH
Q1137 BUFFER
Q1132 REC/PB SWITCH
Q1133 PEAKING AMP
<PB4.9V>
<E/L>
<*L/E>
<*MP/ME>
<*ME/MP>
<VIDEO4.9V>
<SOFT.LIM.OUT>
<DOP>
<CAP.ON>
<*SP/LP>
<*E/L>
<PB5V>
FL1101 DEMOD LPF
Q1138 BUFFER
Q1113, 1115 EQ.
Q1118 SWITCH
Q1114 DC BIAS
Q1117 EQ.
Q1120 SWITCH
Q1122 E/L SWITCH
Q1143 SWITCH
Q1123 PEAKING AMP
Q1127 SWITCH
Q1125 BUFFER
CN1101 26P
1 PB Y RF
2 CAP ON
3 REC Y RF OUT
4 E DET
5 RF GND
6 DOP
7 RF GND
8 E*MP
9 SOFT LIM OUT
10 N.C.
11 REC Y RF IN
12 *SP/LP
13 *ME/MP
14 E/L
15 DEMOD OUT
16 PB4.9V
17 VG1
18 *L/E
19 PB Y OUT
20 *E/L
21 VIDEO GND
22 EDIT
23 VIDEO GND
24 VIDEO 4.9V
25 EMP
26 Y COMB OUT
TO VS-125 BOARD (5/5) CN205
(See Page 4-41)

PATH

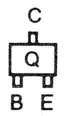
	VIDEO SIGNAL	
ROMA	Y	Y/CHROMA
	➡	
	⇨	

HE-19 BOARD

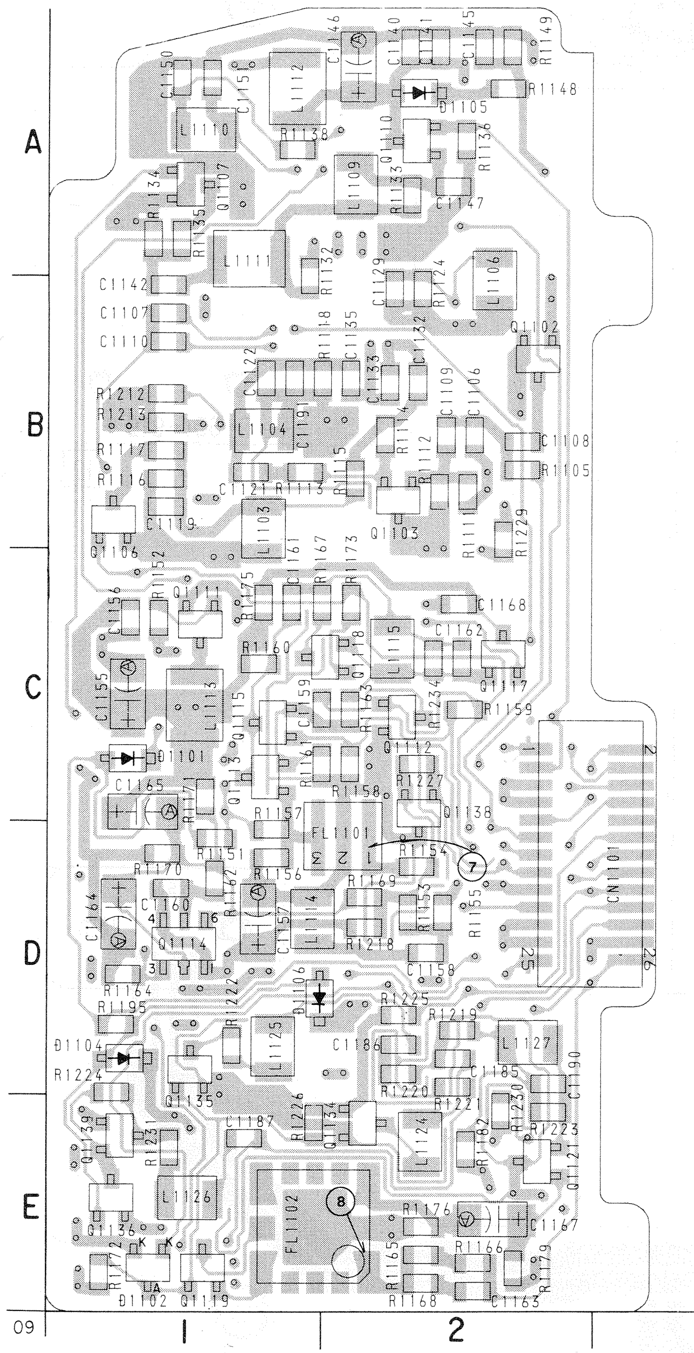


HE-19 (Hi8 VIDEO) PRINTED WIRING BOARD

- **For printed wiring boards.**
- HE-19 board is a four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- Chip transistor

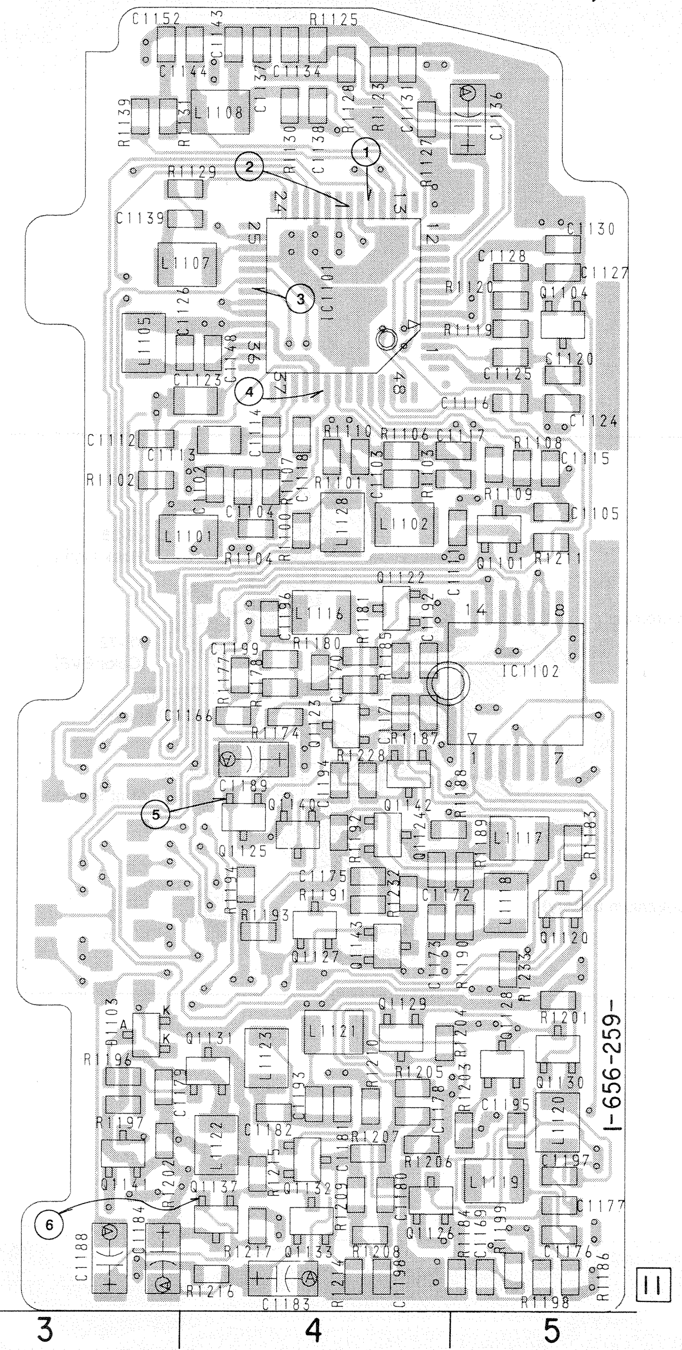


HE-19 BOARD (COMPONENT SIDE)



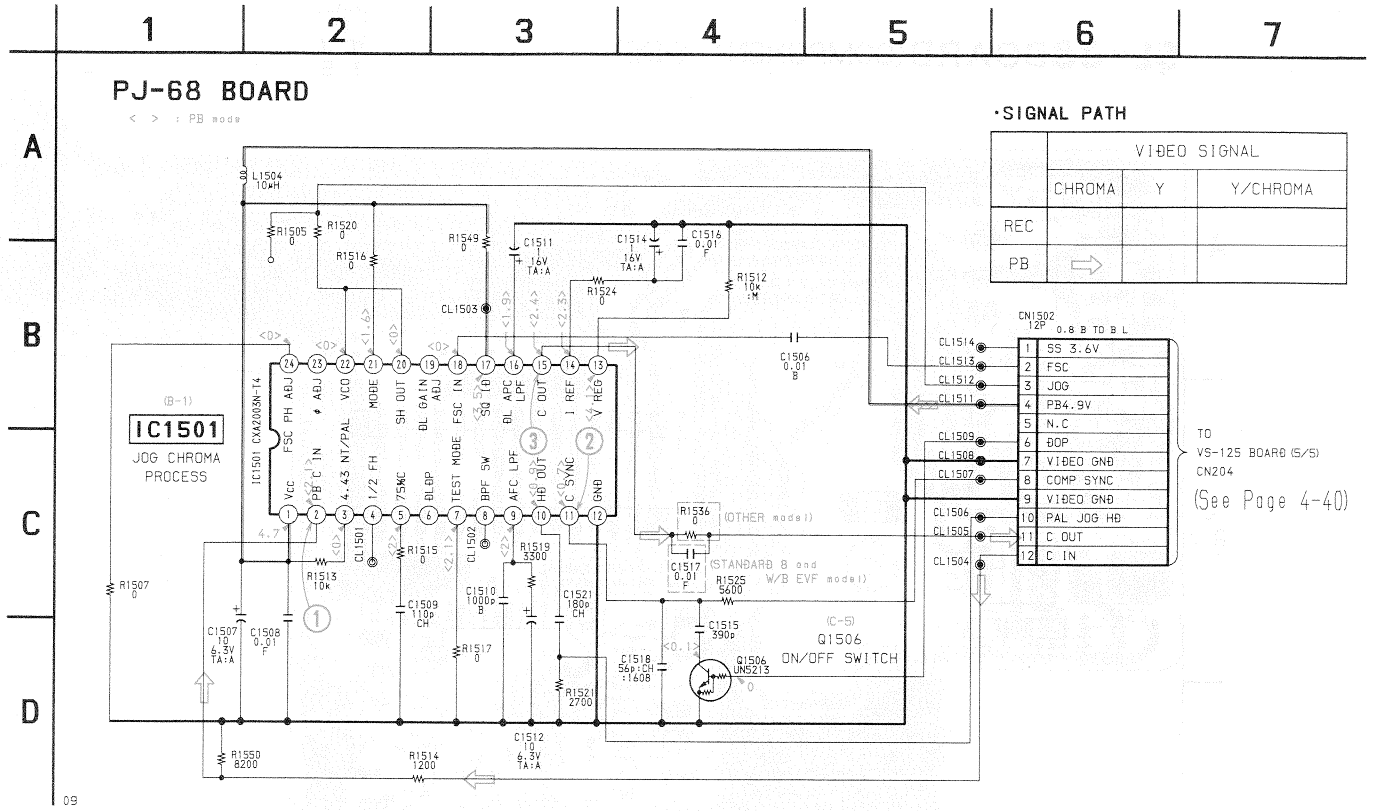
A
B
C
D
E
1
2
09
IC1101
CN1101
FL1101
FL1102
Q1101
Q1102
Q1103
Q1111
Q1112
Q1114
Q1135
Q1138
D1101
D1102
D1104
D1105
D1106
Q1119

HE-19 BOARD (CONDUCTOR SIDE)



3
4
5
IC1101
IC1102
1-656-259-11
11

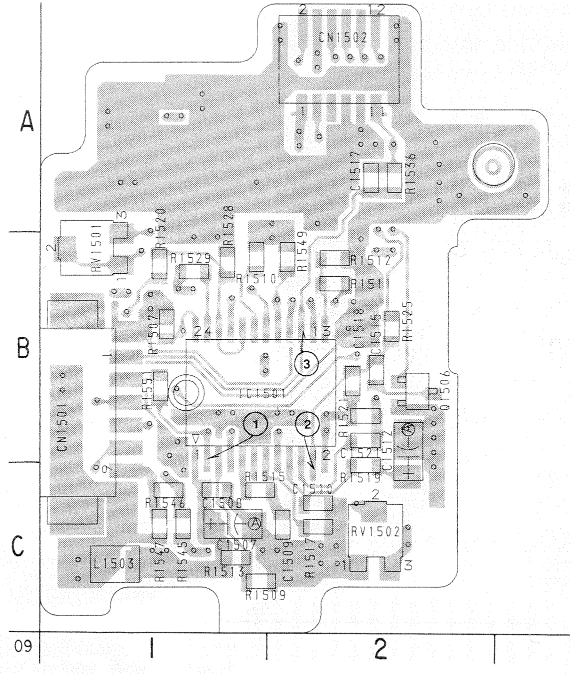
PJ-68 (PAL JOG PROCESS) SCHEMATIC DIAGRAM



1
2
3
4
5
6
7
A
B
C
D
PJ-68 BOARD
< > : PB mode
IC1501
JOG CHROMA PROCESS
(B-1)
IC1501 CXA2003N-T4
FSC PH ADJ
ϕ ADJ
VCO
MODE
SH OUT
DL GAIN ADJ
FSC IN
SQ ID
DL APC LPF
C OUT
I REF
V REG
Vcc
PB C IN
4.43 NT/PAL
1/2 FH
75%C
DLDP
TEST MODE
BPF SW
AFC LPF
HD OUT
C SYNC
GND
L1504 10μH
R1505 0
R1520 0
R1516 0
R1549 0
C1511 1 16V TA:A
C1514 1 16V TA:A
C1516 0.01 F
R1512 10k :M
R1524 0
CL1503
CL1501
CL1502
R1507 0
R1513 10k
R1515 0
R1519 3300
C1507 10 6.3V TA:A
C1508 0.01 F
C1509 110p CH
C1510 1000p B
R1517 0
C1521 180p CH
R1521 2700
R1550 8200
R1514 1200
C1512 10 6.3V TA:A
C1506 0.01 B
R1536 0
(OTHER model)
C1517 0.01 F
(STANDARD 8 and W/B EVF model)
R1525 5600
C1515 390p
C1518 56p:CH :1608
Q1506 UN5213
(C-5)
Q1506
ON/OFF SWITCH
·SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
CN1502 12P 0.8 B TO B L
CL1514
CL1513
CL1512
CL1511
CL1509
CL1508
CL1507
CL1506
CL1505
CL1504
1 SS 3.6V
2 FSC
3 JOG
4 PB4.9V
5 N.C
6 DOP
7 VIDEO GND
8 COMP SYNC
9 VIDEO GND
10 PAL JOG HD
11 C OUT
12 C IN
TO VS-125 BOARD (5/5) CN204
(See Page 4-40)
09

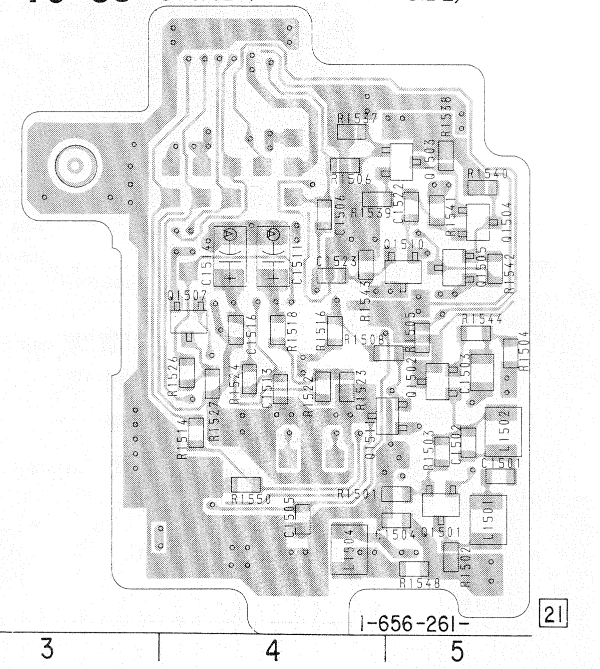
PJ-68 (PAL JOG PROCESS) PRINTED WIRING BOARD

PJ-68 BOARD (COMPONENT SIDE)



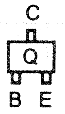
A
B
C
1
2
09
IC1501
CN1501
CN1502
RV1501
RV1502
L1503

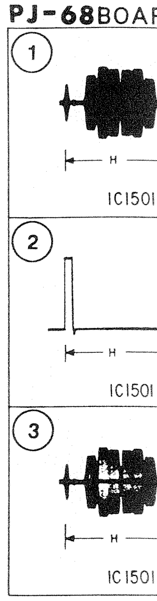
PJ-68 BOARD (CONDUCTOR SIDE)

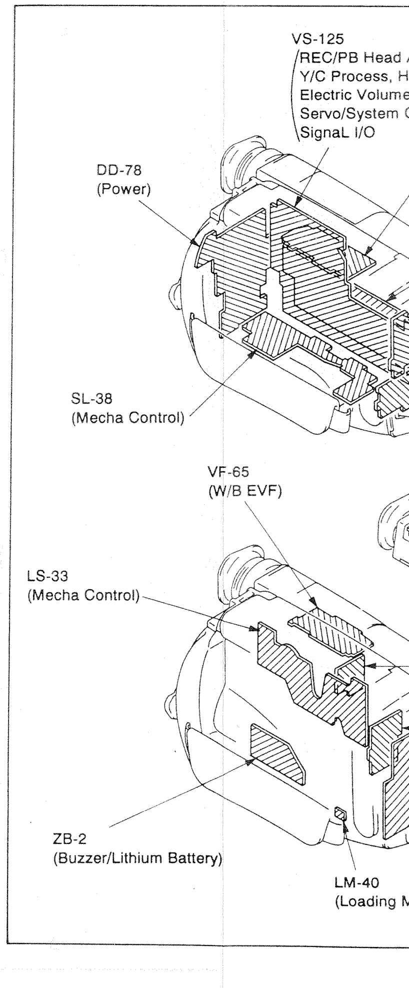


3
4
5
1-656-261-21
21

- **For printed wiring boards.**
- PJ-68 board is a four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- Chip transistor

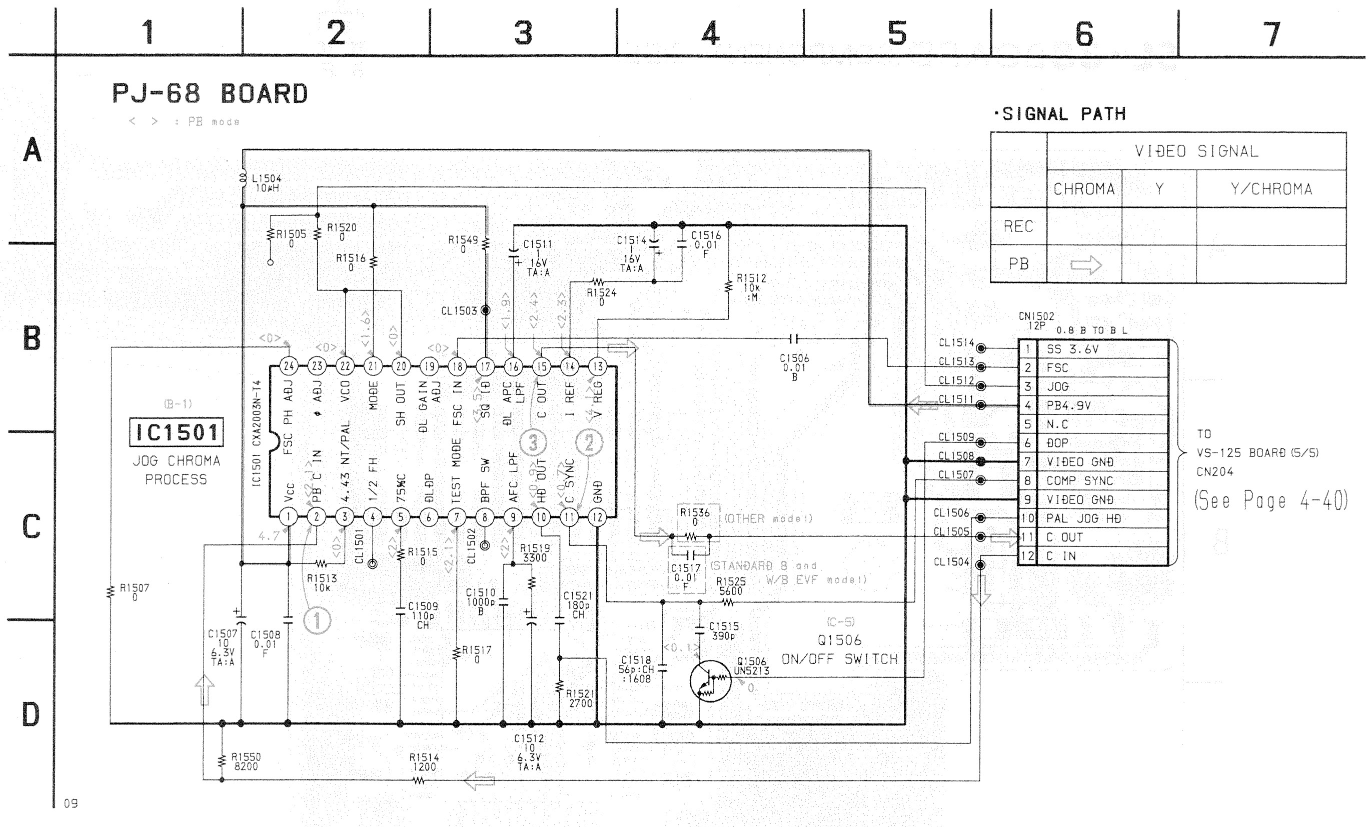




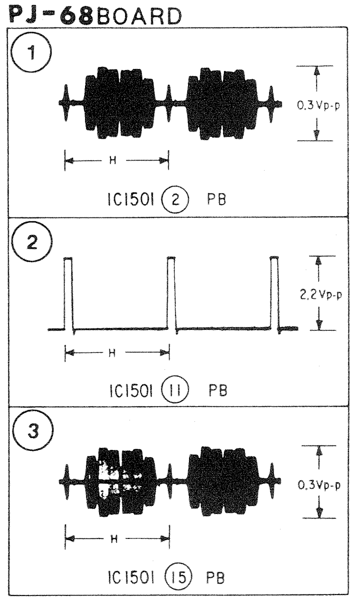


VS-125
REC/PB Head
Y/C Process, H
Electric Volume
Servo/System
SignaL I/O
DD-78
(Power)
SL-38
(Mecha Control)
VF-65
(W/B EVF)
LS-33
(Mecha Control)
ZB-2
(Buzzer/Lithium Battery)
LM-40
(Loading M

PJ-68 (PAL JOG PROCESS) SCHEMATIC DIAGRAM

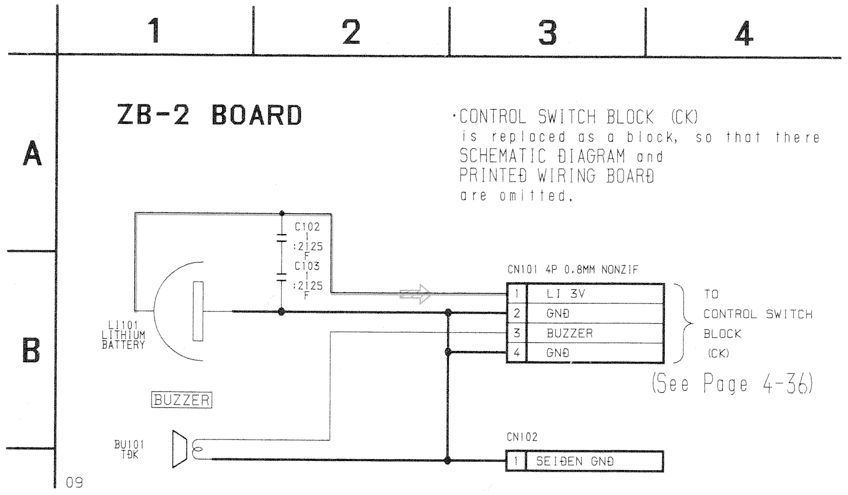


1
2
3
4
5
6
7
A
B
C
D
PJ-68 BOARD
< > : PB mode
·SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
IC1501
JOG CHROMA PROCESS
IC1501 CXA2009N-T4
Vcc
FSC PH ADJ
PB C IN
4.43 NT/PAL
VCO
1/2 FH
MODE
75NC
SH OUT
DLBP
DL GAIN ADJ
TEST MODE
FSC IN
BPF SW
SQ TG
AFC LPF
DL APC LPF
HD OUT
C OUT
C SYNC
I REF
GND
V REG
L1504 10µH
R1505
R1520 0
R1516 0
R1549 0
C1511 1 16V TA:A
C1514 1 16V TA:A
C1516 0.01 F
R1512 10k :M
R1524 0
CL1503
C1506 0.01 B
R1536 0
(OTHER model)
C1517 0.01 F
(STANDARD 8 and W/B EVF model)
R1525 5600
R1507 0
R1513 10k
R1515 0
R1519 3300
C1507 10 6.3V TA:A
C1508 0.01 F
C1509 110p CH
C1510 1000p B
C1521 180p CH
C1515 390p
R1517 0
C1518 56p:CH :1608
Q1506 UN5213
Q1506 ON/OFF SWITCH
(C-5)
R1521 2700
C1512 10 6.3V TA:A
R1550 8200
R1514 1200
CN1502 12P 0.8 B TO B L
1 SS 3.6V
2 FSC
3 JOG
4 PB4.9V
5 N.C
6 DOP
7 VIDEO GND
8 COMP SYNC
9 VIDEO GND
10 PAL JOG HD
11 C OUT
12 C IN
CL1514
CL1513
CL1512
CL1511
CL1509
CL1508
CL1507
CL1506
CL1505
CL1504
TO VS-125 BOARD (5/5) CN204
(See Page 4-40)
09



ZB-2 (BUZZER/LITHIUM BATTERY) SCHEMATIC DIAGRAM

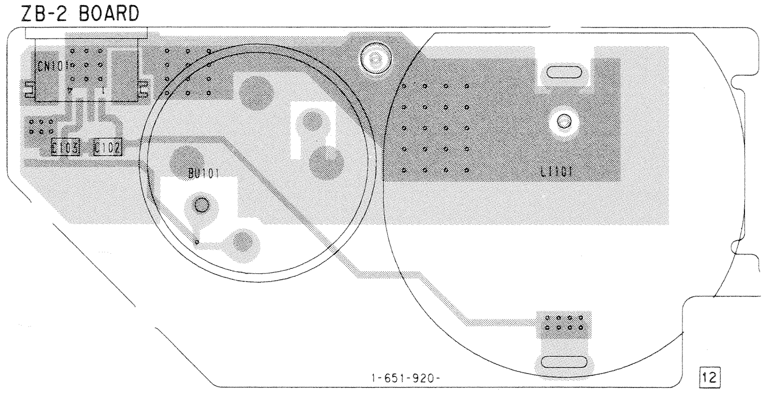
— Ref. No. ZB-2 BOARD: 4000 series —



1
2
3
4
A
B
ZB-2 BOARD
·CONTROL SWITCH BLOCK (CK) is replaced as a block, so that there SCHEMATIC DIAGRAM and PRINTED WIRING BOARD are omitted.
C102 1 2.5 F
C103 1 2.5 F
CN101 4P 0.8MM NONZIF
1 LI 3V
2 GND
3 BUZZER
4 GND
TO CONTROL SWITCH BLOCK (CK)
(See Page 4-36)
L1101 LITHIUM BATTERY
BUZZER
BU101 TDK
CN102
1 SEIDEN GND
09

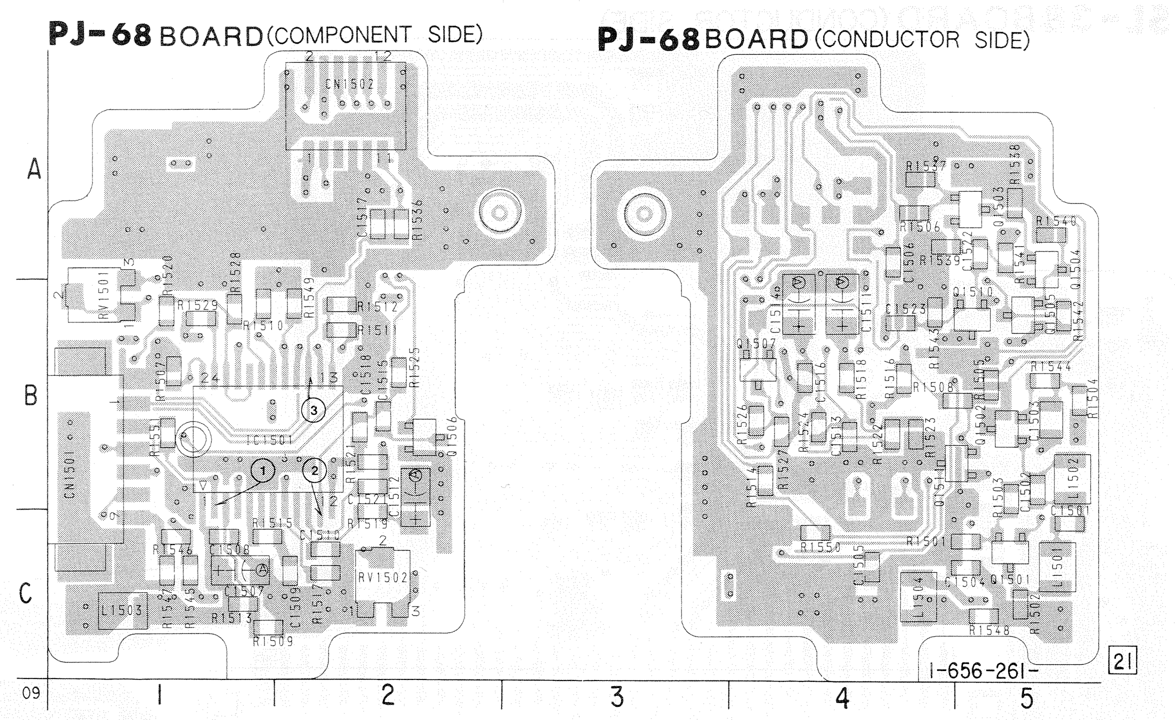
ZB-2 (BUZZER/LITHIUM BATTERY) PRINTED WIRING BOARD

— Ref. No. ZB-2 BOARD: 4000 series —



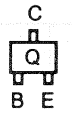
ZB-2 BOARD
CN101
C103
C102
BU101
LI101
1-651-920-
12

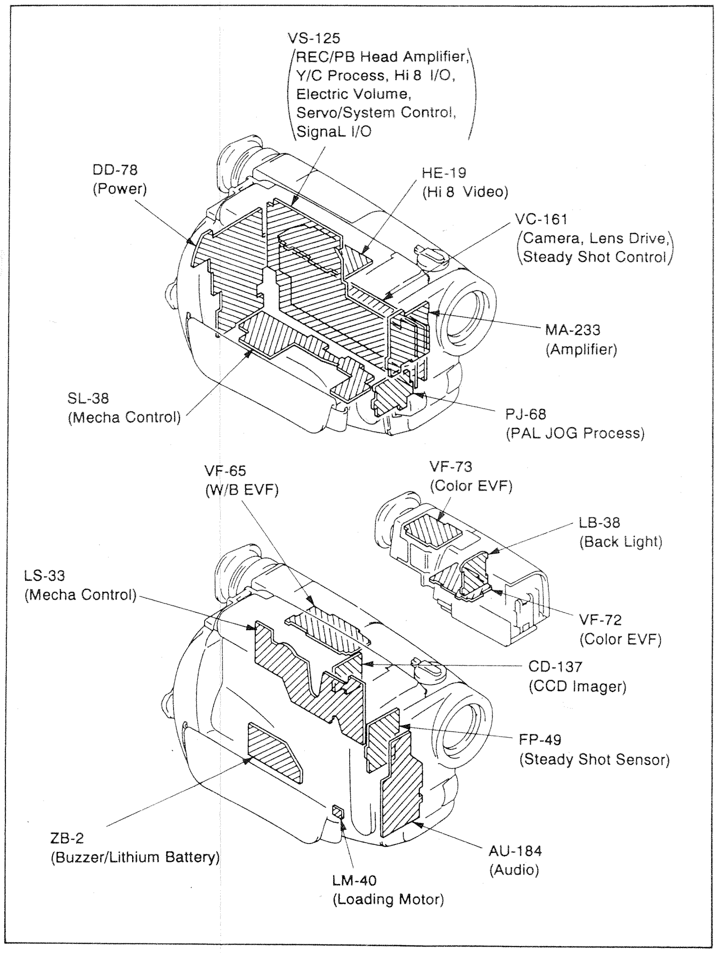
PJ-68 (PAL JOG PROCESS) PRINTED WIRING BOARD



PJ-68 BOARD (COMPONENT SIDE)
PJ-68 BOARD (CONDUCTOR SIDE)
A
B
C
1
2
3
4
5
CN1502
CN1501
IC1501
RV1501
RV1502
L1503
Q1506
1-656-261-
21
09

- **For printed wiring boards.**
- PJ-68 board is a four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- Chip transistor





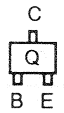
VS-125
(REC/PB Head Amplifier, Y/C Process, Hi 8 I/O, Electric Volume, Servo/System Control, SignaL I/O)
DD-78
(Power)
HE-19
(Hi 8 Video)
VC-161
(Camera, Lens Drive, Steady Shot Control)
MA-233
(Amplifier)
SL-38
(Mecha Control)
PJ-68
(PAL JOG Process)
VF-65
(W/B EVF)
VF-73
(Color EVF)
LB-38
(Back Light)
LS-33
(Mecha Control)
VF-72
(Color EVF)
CD-137
(CCD Imager)
FP-49
(Steady Shot Sensor)
ZB-2
(Buzzer/Lithium Battery)
AU-184
(Audio)
LM-40
(Loading Motor)

- **For printed wiring board.**
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.

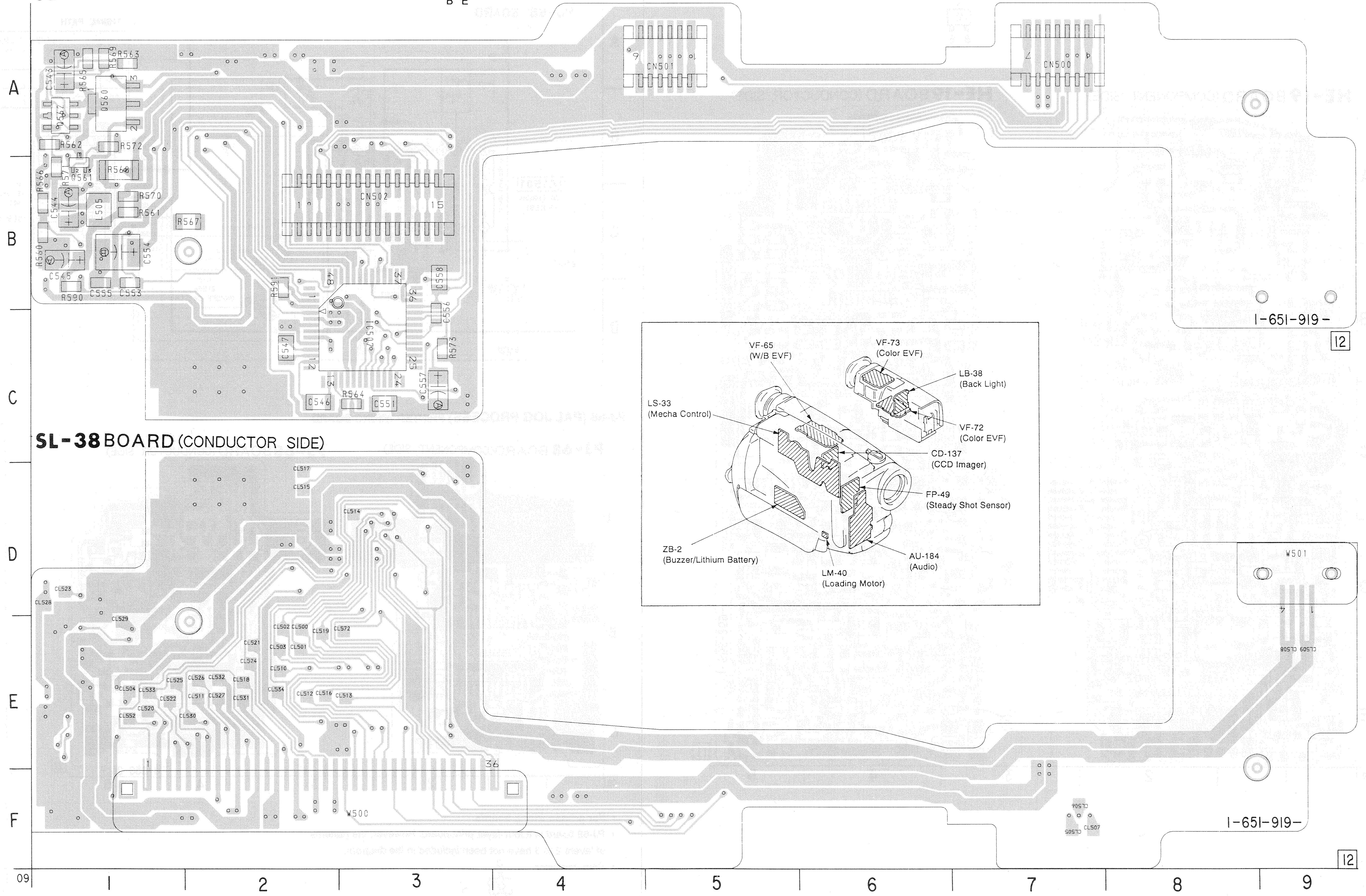
SL-38 (MECHA CONTROL) PRINTED WIRING BOARD

— Ref. No. LS-33 BOARD: 3000 series, SL-38 BOARD: 4000 series —

- **For printed wiring boards.**
- Chip transistor

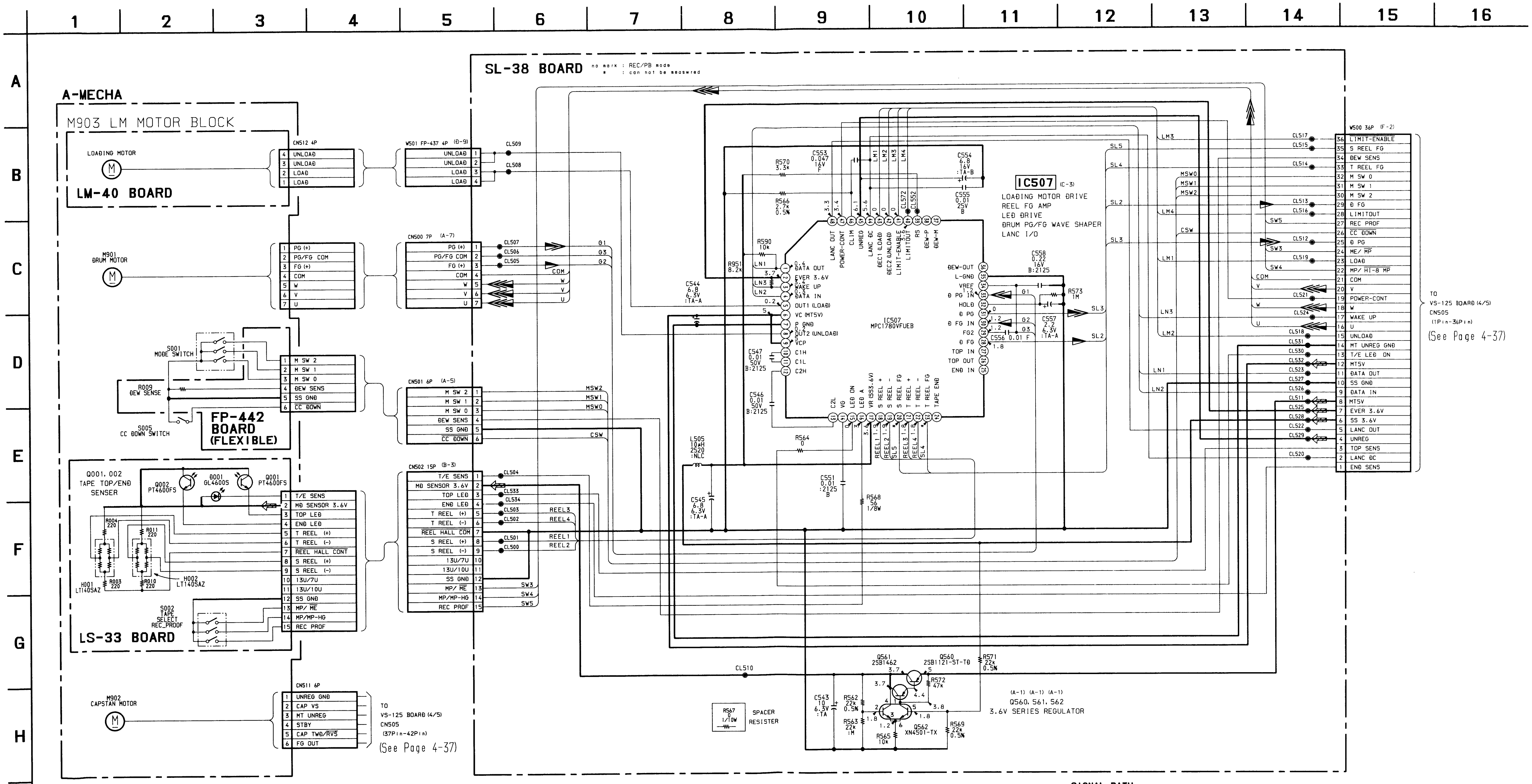


SL-38 BOARD (COMPONENT SIDE)


A
B
C
D
E
F
09
1
2
3
4
5
6
7
8
9
CN501
CN500
CN502
IC501
R563
R569
R565
C543
Q560
Q562
R562
R572
R566
Q561
R568
R570
R561
C544
L505
R567
R560
C554
C545
R590
C555
C553
R591
C558
C556
C547
R573
C557
C546
R564
C551
1-651-919-
12
SL-38 BOARD (CONDUCTOR SIDE)
CL517
CL515
CL514
CL523
CL528
CL529
CL502
CL500
CL519
CL572
CL521
CL503
CL501
CL524
CL510
CL525
CL526
CL532
CL518
CL504
CL533
CL522
CL511
CL527
CL531
CL534
CL512
CL516
CL513
CL520
CL552
CL530
W500
W501
CL506
CL507
CL505
CL508
CL509
VF-65
(W/B EVF)
VF-73
(Color EVF)
LB-38
(Back Light)
LS-33
(Mecha Control)
VF-72
(Color EVF)
CD-137
(CCD Imager)
FP-49
(Steady Shot Sensor)
ZB-2
(Buzzer/Lithium Battery)
AU-184
(Audio)
LM-40
(Loading Motor)

SL-38 (MECHA CONTROL) SCHEMATIC DIAGRAM

— Ref. No. LS-33 BOARD: 3000 series, SL-38 BOARD: 4000 series —

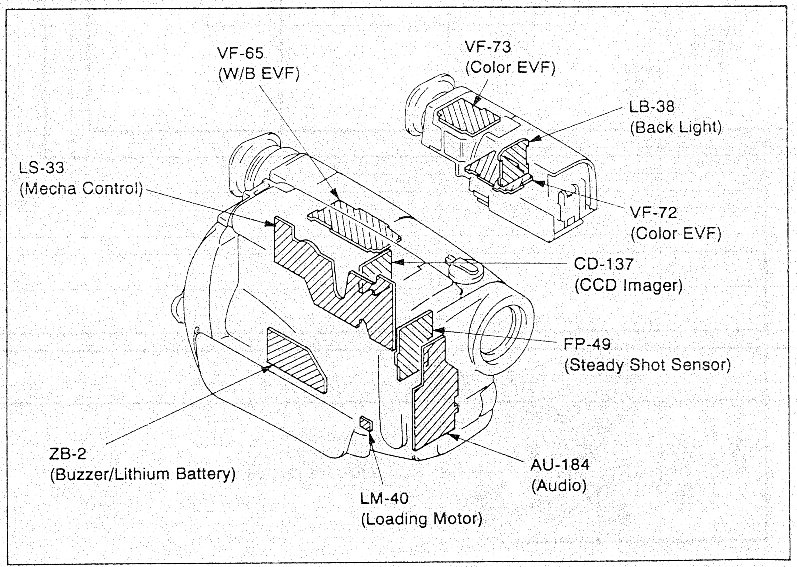

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
A-MECHA
M903 LM MOTOR BLOCK
LOADING MOTOR
LM-40 BOARD
M901 DRUM MOTOR
S001 MODE SWITCH
R009 DEW SENSE
S005 CC DOWN SWITCH
FP-442 BOARD (FLEXIBLE)
Q001, 002 TAPE TOP/END SENSER
Q002 PT4600FS
D001 GL4600S
Q001 PT4600FS
H001 LT1405AZ
H002 LT1405AZ
S002 TAPE SELECT REC PROOF
LS-33 BOARD
M902 CAPSTAN MOTOR
CN512 4P
W501 FP-437 4P (D-9)
CN500 7P (A-7)
CN501 6P (A-5)
CN502 15P (B-3)
CN511 6P
TO VS-125 BOARD (4/5) CN505 (37Pin-42Pin) (See Page 4-37)
SL-38 BOARD
no mark : REC/PB mode
* : can not be measured
IC507
LOADING MOTOR DRIVE
REEL FG AMP
LED DRIVE
DRUM PG/FG WAVE SHAPER
LANC I/O
IC507 MPC1780VFUEB
Q561 2SB1462
Q560 2SB1121-ST-TD
Q562 XN4501-TX
(A-1) (A-1) (A-1)
Q560, 561, 562
3.6V SERIES REGULATOR
R567 0 1/10W SPACER RESISTER
CL510
W500 36P (F-2)
LIMIT-ENABLE
S REEL FG
DEW SENS
T REEL FG
M SW 0
M SW 1
M SW 2
D FG
LIMITOUT
REC PROF
CC DOWN
D PG
ME/MP
MP/HI-8 MP
LOAD
COM
V
POWER-CONT
W
WAKE UP
U
UNLOAD
MT UNREG GND
T/E LED ON
MTSV
DATA OUT
SS GND
DATA IN
MTSV
EVER 3.6V
SS 3.6V
LANC OUT
UNREG
TOP SENS
LANC DC
END SENS
TO VS-125 BOARD (4/5) CN505 (1Pin-36Pin) (See Page 4-37)

·LM-40, FP-442 & LS-33 BOARD is replaced block, so that there PRINTED WIRING BOARD is omitted

·SIGNAL PATH

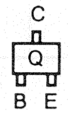
	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷▷	
Drum servo (speed and phase)		▷▷▷	

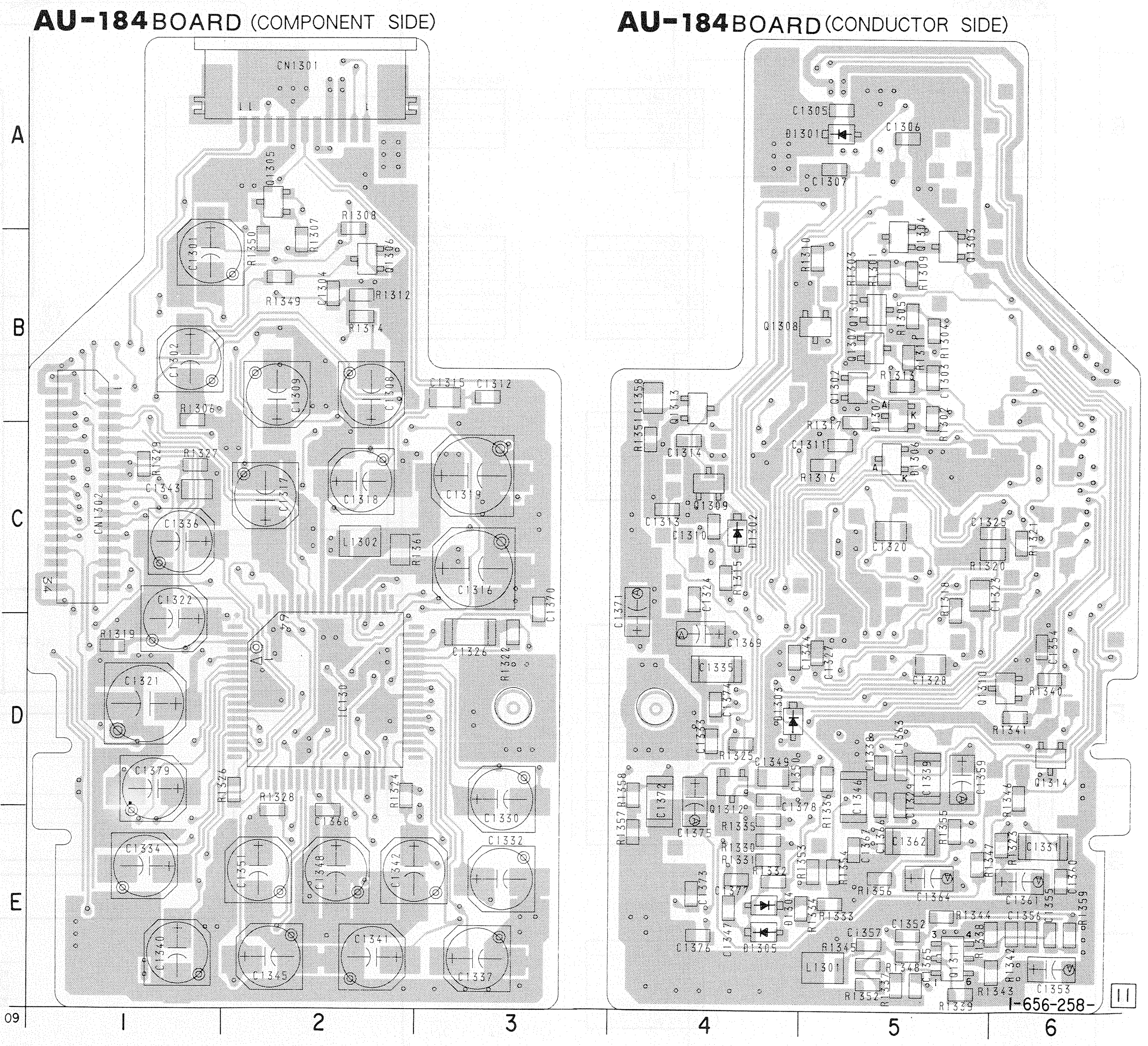
09


VF-65
(W/B EVF)
VF-73
(Color EVF)
LB-38
(Back Light)
LS-33
(Mecha Control)
VF-72
(Color EVF)
CD-137
(CCD Imager)
FP-49
(Steady Shot Sensor)
ZB-2
(Buzzer/Lithium Battery)
AU-184
(Audio)
LM-40
(Loading Motor)

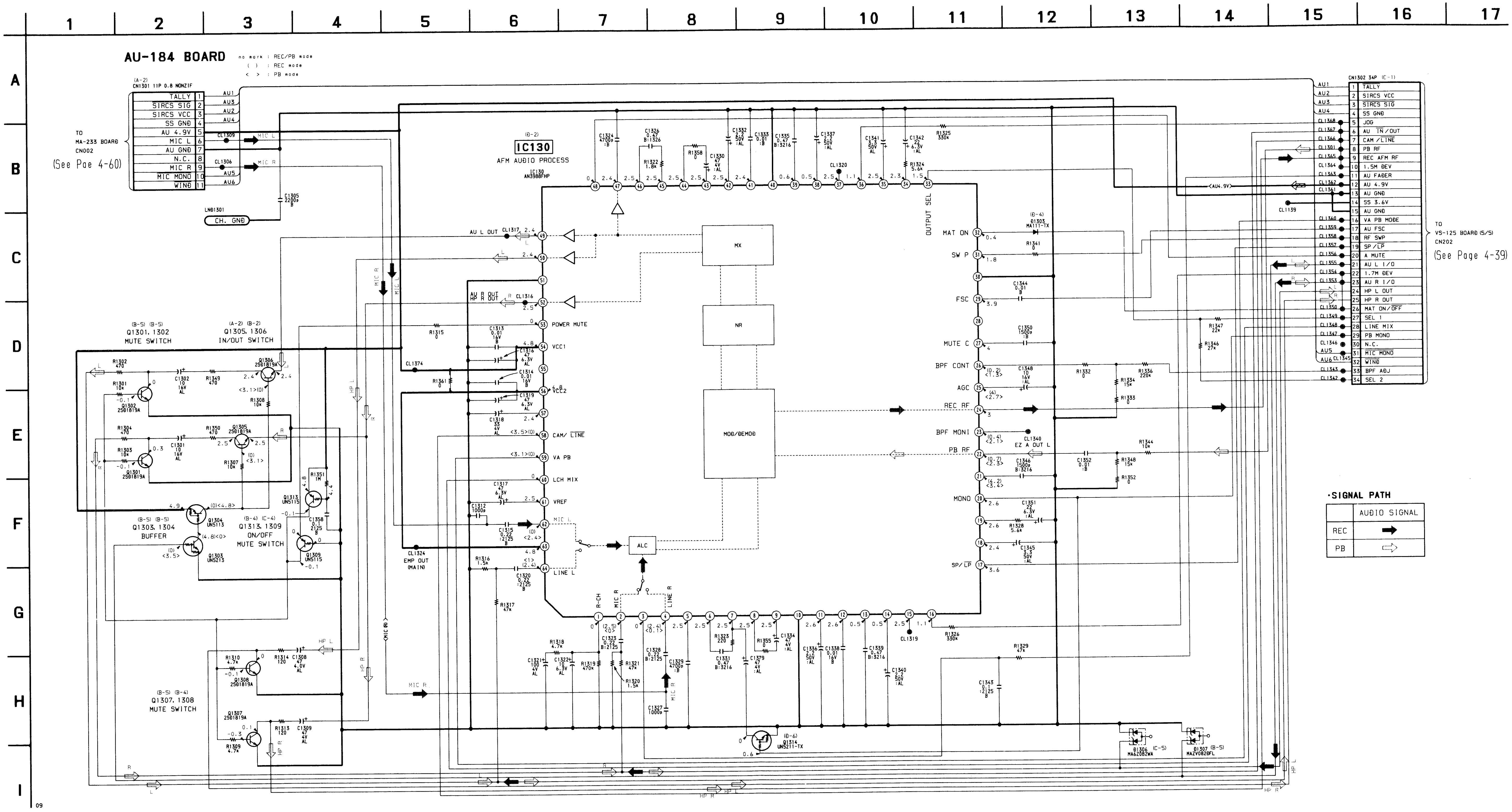
AU-184 (AUDIO) PRINTED WIRING BOARD

- **For printed wiring boards.**
- AU-184 board is a four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- Chip transistor




AU-184 BOARD (COMPONENT SIDE)
AU-184 BOARD (CONDUCTOR SIDE)
A
B
C
D
E
1
2
3
4
5
6
09
CN1301
CN1302
IC1301
1-656-258-
11

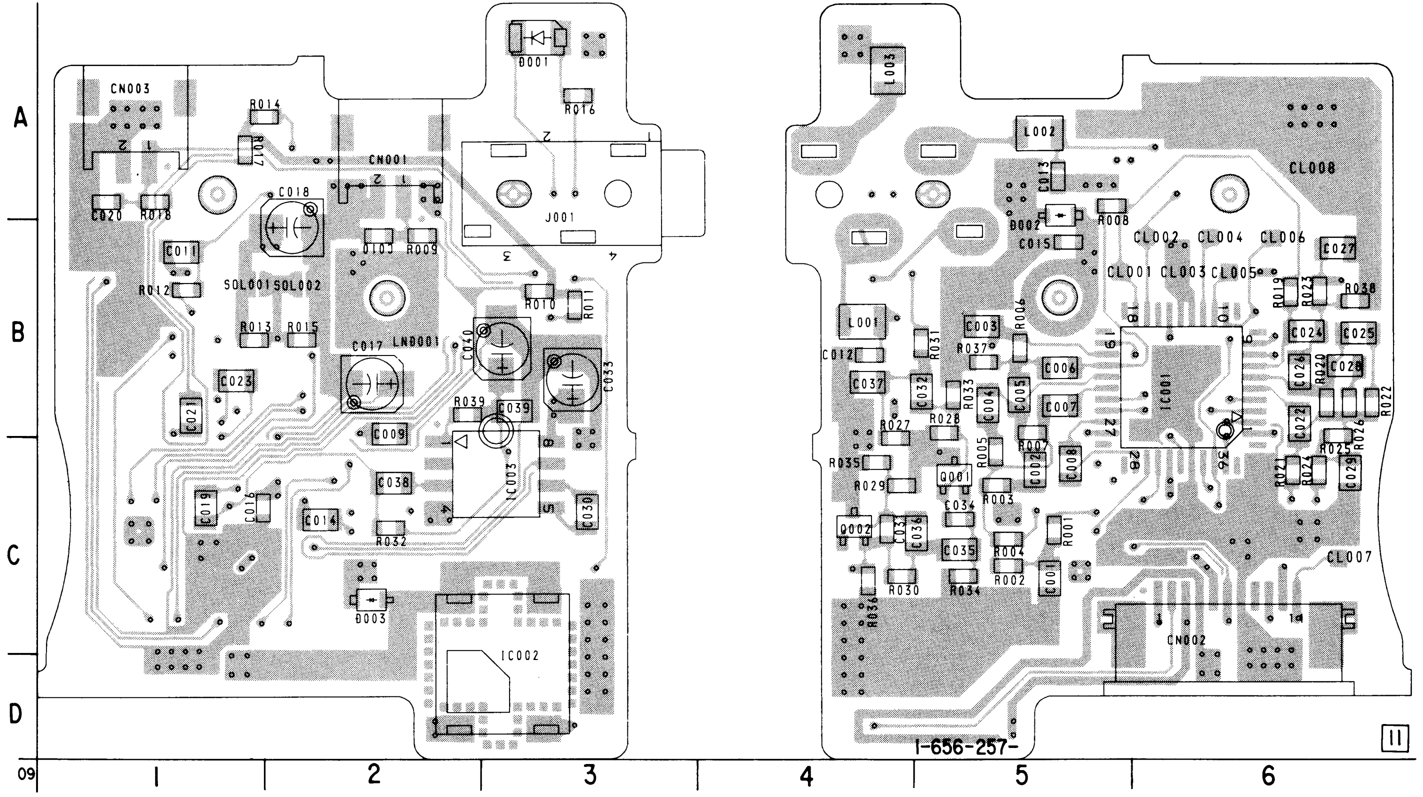
AU-184 (AUDIO) SCHEMATIC DIAGRAM

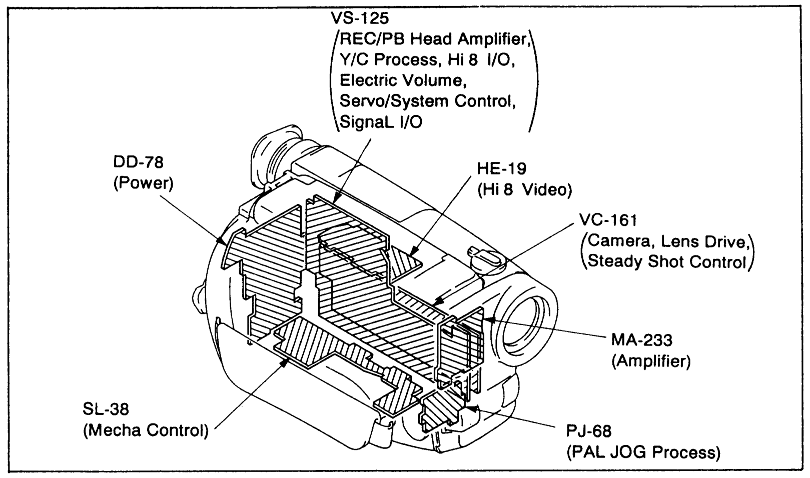

AU-184 BOARD
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
CN1301 11P 0.8 NONZIF
TALLY
SIRCS SIG
SIRCS VCC
SS GND
AU 4.9V
MIC L
AU GND
N.C.
MIC R
MIC MONO
WIND
TO MA-233 BOARD CN002
(See Pae 4-60)
CH. GND
IC130
AFM AUDIO PROCESS
IC130 AN3988FHP
AU L OUT
AU R OUT
HP R OUT
POWER MUTE
VCC1
VCC2
CAM/LINE
VA PB
LCH MIX
VREF
EMP OUT (MAIN)
LINE L
MX
NR
MOD/DEMOD
ALC
OUTPUT SEL
MAT ON
SW P
FSC
MUTE C
BPF CONT
AGC
REC RF
BPF MONI
PB RF
MONO
SP/LP
EZ A OUT L
Q1301, 1302 MUTE SWITCH
Q1305, 1306 IN/OUT SWITCH
Q1303, 1304 BUFFER
Q1313, 1309 ON/OFF MUTE SWITCH
Q1307, 1308 MUTE SWITCH
Q1314 UN5211-TX
D1303 MA111-TX
D1306 MA6Z082WA
D1307 MAZV0820FL
CN1302 34P
TALLY
SIRCS VCC
SIRCS SIG
SS GND
JOG
AU IN/OUT
CAM/LINE
PB RF
REC AFM RF
1.5M DEV
AU FADER
AU 4.9V
AU GND
SS 3.6V
AU GND
VA PB MODE
AU FSC
RF SWP
SP/LP
A MUTE
AU L I/O
1.7M DEV
AU R I/O
HP L OUT
HP R OUT
MAT ON/OFF
SEL 1
LINE MIX
PB MONO
N.C.
MIC MONO
WIND
BPF ADJ
SEL 2
TO VS-125 BOARD (5/5) CN202
(See Page 4-39)
·SIGNAL PATH
AUDIO SIGNAL
REC
PB
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A B C D E F G H I
09

MA-233 (MIC AMPLIFIER) PRINTED WIRING BOARD

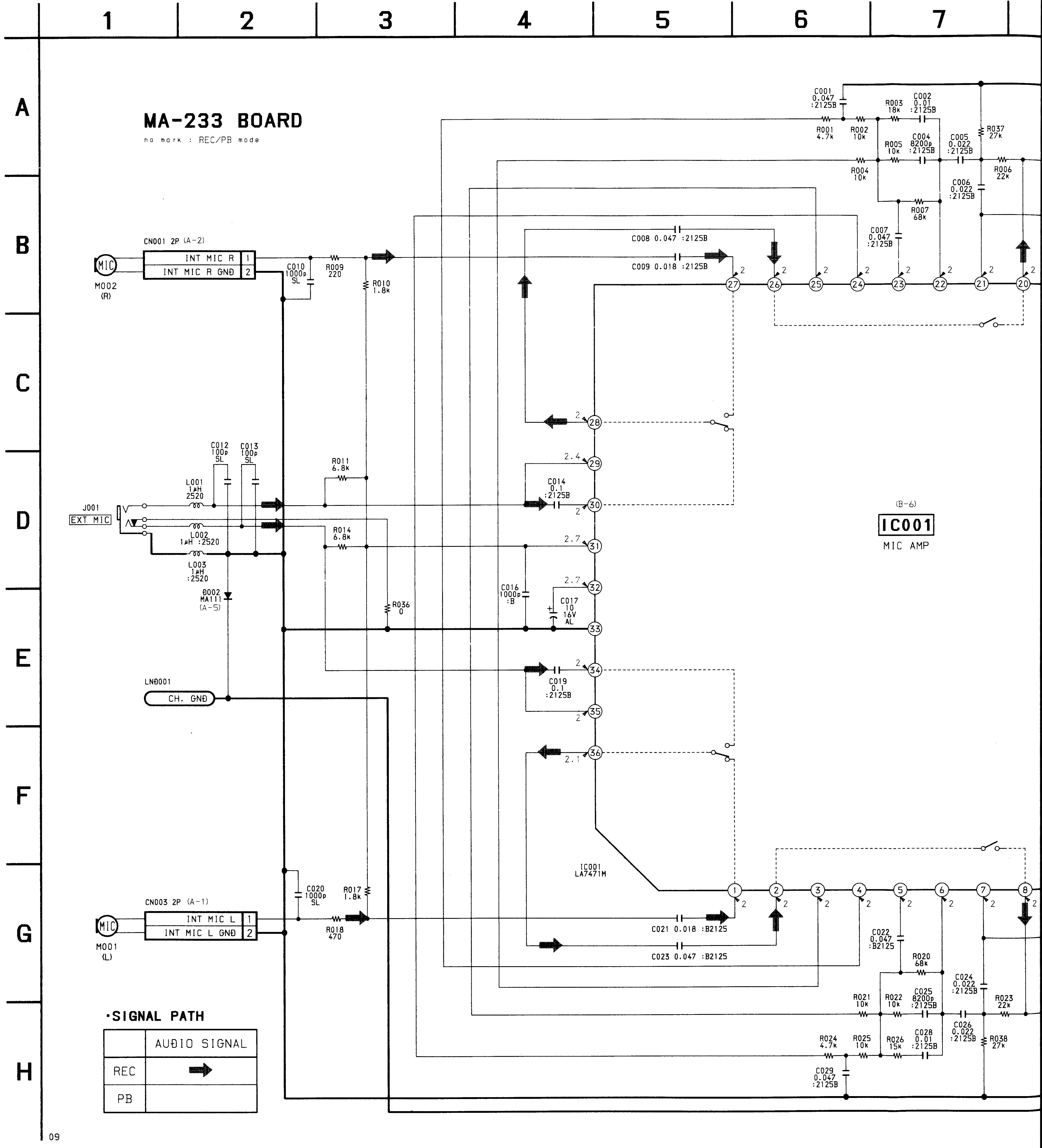
- **For printed wiring boards.**
- MA-233 board is a four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

MA-233 BOARD (COMPONENT SIDE) **MA-233 BOARD (CONDUCTOR SIDE)**


A
B
C
D
1
2
3
4
5
6
09
CN003
R014
R017
R016
D001
CN001
J001
C018
C020
R018
C011
R012
SOL001
SOL002
D101
R009
R010
R011
R013
R015
C017
LN8001
C040
C033
C023
R039
C039
C021
C009
IC003
C038
C019
C016
C014
R032
C030
D003
IC002
L003
L002
CL008
C013
D002
R008
C015
CL002
CL004
CL006
CL001
CL003
CL005
C027
R038
L001
C012
R031
C003
R006
R037
C037
C032
R033
C004
C005
C006
C007
IC001
C024
C025
C026
C028
R022
C022
R027
R028
R035
R029
Q001
C034
R003
C002
C008
R025
R026
C029
R021
R024
Q002
C036
C035
R004
R001
R002
C001
R030
R034
R036
CN002
CL007
1-656-257-
11

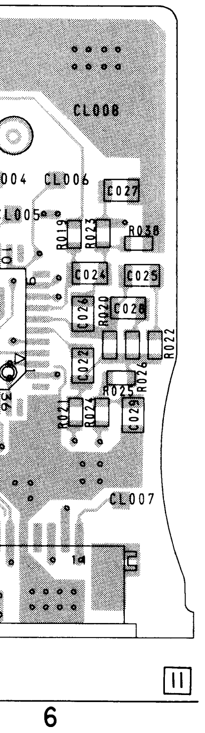

VS-125
(REC/PB Head Amplifier, Y/C Process, Hi 8 I/O, Electric Volume, Servo/System Control, SignaL I/O)
DD-78
(Power)
HE-19
(Hi 8 Video)
VC-161
(Camera, Lens Drive, Steady Shot Control)
MA-233
(Amplifier)
SL-38
(Mecha Control)
PJ-68
(PAL JOG Process)

MA-233 (MIC AMPLIFIER) SCHEMATIC DIAGRAM


1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
MA-233 BOARD
no mark : REC/PB mode
MIC
M002
(R)
CN001 2P (A-2)
INT MIC R
INT MIC R GND
C010 1000p SL
R009 220
R010 1.8k
C008 0.047 :2125B
C009 0.018 :2125B
C001 0.047 :2125B
R001 4.7k
R002 10k
R003 18k
C002 0.01 :2125B
R005 10k
C004 8200p :2125B
C005 0.022 :2125B
R037 27k
R004 10k
R006 22k
C006 0.022 :2125B
R007 68k
C007 0.047 :2125B
C012 100p SL
C013 100p SL
L001 1μH 2520
R011 6.8k
C014 0.1 :2125B
J001
EXT MIC
L002 1μH :2520
R014 6.8k
L003 1μH :2520
D002 MA111 (A-5)
R036 0
C016 1000p :B
C017 10 16V AL
C019 0.1 :2125B
LN8001
CH. GND
(B-6)
IC001
MIC AMP
IC001 LA7471M
CN003 2P (A-1)
INT MIC L
INT MIC L GND
MIC
M001
(L)
C020 1000p SL
R017 1.8k
R018 470
C021 0.018 :B2125
C023 0.047 :B2125
C022 0.047 :B2125
R020 68k
C024 0.022 :2125B
R021 10k
R022 10k
C025 8200p :2125B
R023 22k
C026 0.022 :2125B
R024 4.7k
R025 10k
R026 15k
C028 0.01 :2125B
R038 27k
C029 0.047 :2125B
·SIGNAL PATH
AUDIO SIGNAL
REC
PB
09

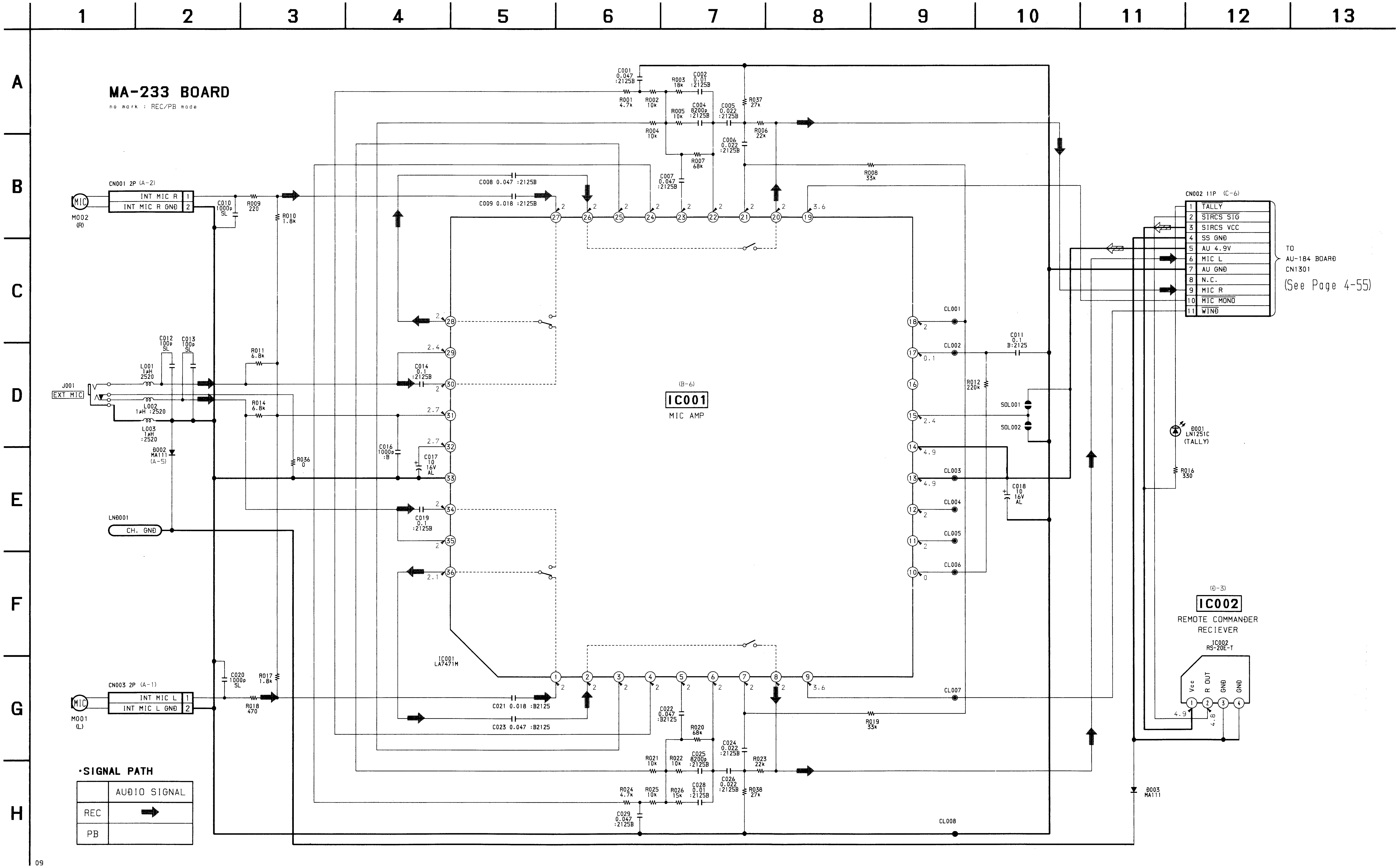
ver, the patterns
agram.

DE)



CL008
004 CL006
C027
L005
R013
R023
R038
C024
C025
C028
C026
C022
R025
R026
R021
R024
C029
R022
CL007
11
6

MA-233 (MIC AMPLIFIER) SCHEMATIC DIAGRAM

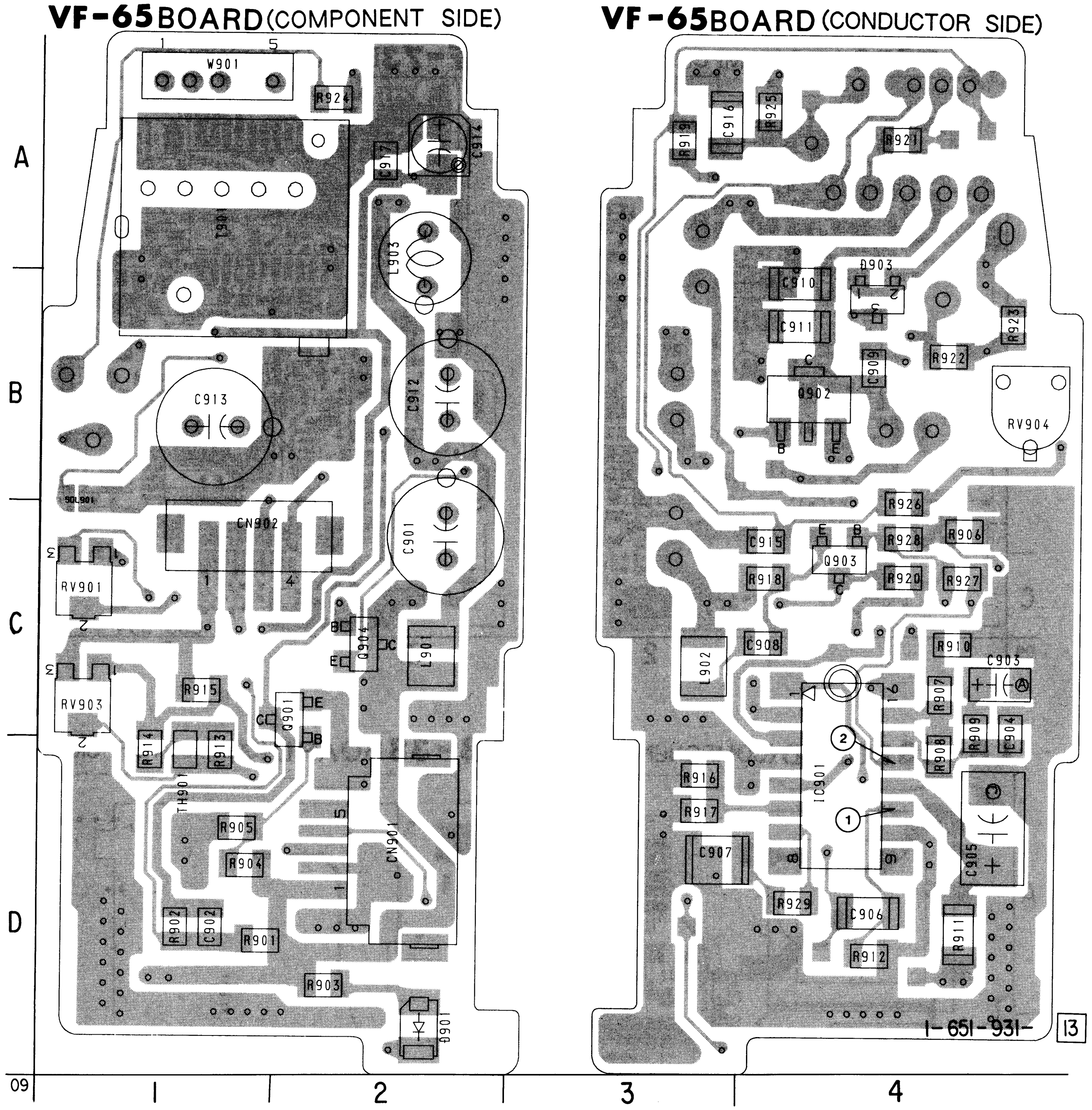


1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
MA-233 BOARD
no mark : REC/PB mode
CN001 2P (A-2)
INT MIC R
INT MIC R GND
MIC
M002 (R)
C010 1000p SL
R009 220
R010 1.8k
C008 0.047 :2125B
C009 0.018 :2125B
C001 0.047 :2125B
R001 4.7k
R002 10k
R003 18k
C002 0.01 :2125B
R004 10k
R005 10k
C004 8200p :2125B
C005 0.022 :2125B
R037 27k
R006 22k
C006 0.022 :2125B
R007 68k
C007 0.047 :2125B
R008 33k
J001
EXT MIC
L001 1µH 2520
L002 1µH :2520
L003 1µH :2520
C012 100p SL
C013 100p SL
D002 MA111 (A-5)
R011 6.8k
R014 6.8k
R036 0
C014 0.1 :2125B
C016 1000p :B
C017 10 16V AL
C019 0.1 :2125B
LND001
CH. GND
(B-6)
IC001
MIC AMP
IC001 LA7471M
CL001
CL002
CL003
CL004
CL005
CL006
CL007
CL008
C011 0.1 B:2125
R012 220k
SOL001
SOL002
C018 10 16V AL
CN002 11P (C-6)
1 TALLY
2 SIRCS SIG
3 SIRCS VCC
4 SS GND
5 AU 4.9V
6 MIC L
7 AU GND
8 N.C.
9 MIC R
10 MIC MONO
11 WIND
TO AU-184 BOARD CN1301
(See Page 4-55)
D001 LN1251C (TALLY)
R016 330
(D-3)
IC002
REMOTE COMMANDER RECIEVER
IC002 RS-20E-T
Vcc
R OUT
GND
GND
4.9
4.8
D003 MA111
CN003 2P (A-1)
INT MIC L
INT MIC L GND
M001 (L)
C020 1000p SL
R017 1.8k
R018 470
C021 0.018 :B2125
C023 0.047 :B2125
C022 0.047 :B2125
R020 68k
R019 33k
C024 0.022 :2125B
R021 10k
R022 10k
C025 8200p :2125B
R023 22k
R024 4.7k
R025 10k
R026 15k
C028 0.01 :2125B
C026 0.022 :2125B
R038 27k
C029 0.047 :2125B
2.4
2.7
2.7
2.1
0.1
2.4
4.9
4.9
3.6
·SIGNAL PATH
AUDIO SIGNAL
REC
PB
09

VF-65 (W/B EVF) PRINTED WIRING BOARD

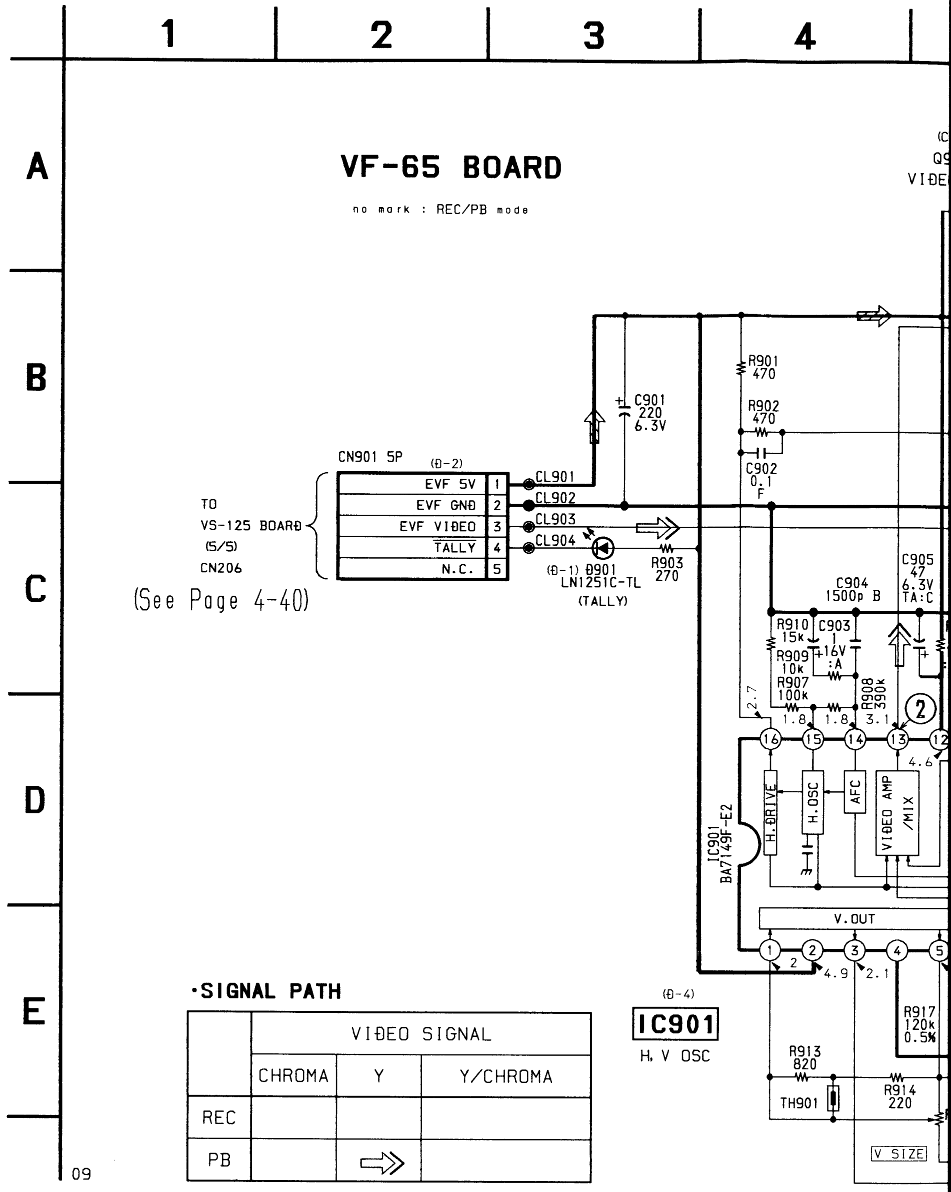
— Ref. No. VF-65 BOARD: 3000 series —

- **For printed wiring boards.**
- **VF-65 board is a four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.**


VF-65 BOARD (COMPONENT SIDE)
VF-65 BOARD (CONDUCTOR SIDE)
A
B
C
D
1
2
3
4
09
W901
R924
C917
C914
L903
C912
C913
C901
CN902
RV901
RV903
Q904
L901
Q901
R915
R914
R913
TH901
R905
R904
CN901
R902
C902
R901
R903
D901
C916
R925
R919
R921
C910
C911
D903
Q902
C909
R922
R923
RV904
R926
R928
R906
C915
Q903
R918
R920
R927
C902
L902
C908
R910
C903
R907
R909
C904
R908
IC901
R916
R917
C907
C905
R929
C906
R911
R912
1-651-931-
13

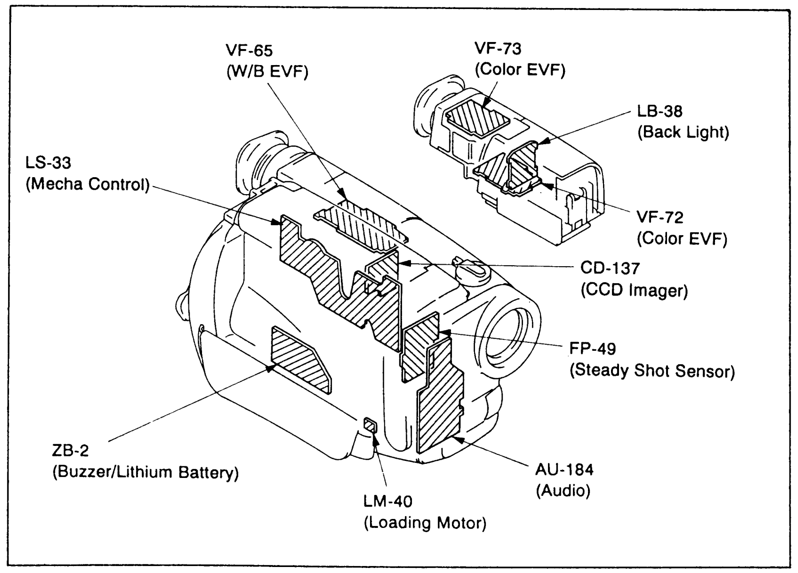
VF-65 (W/B EVF) SCHEMATIC DIAGRAM

— Ref. No. VF-65 BOARD: 3000 series —


1
2
3
4
A
B
C
D
E
VF-65 BOARD
no mark : REC/PB mode
TO
VS-125 BOARD
(5/5)
CN206
(See Page 4-40)
CN901 5P
(D-2)
EVF 5V
EVF GND
EVF VIDEO
TALLY
N.C.
CL901
CL902
CL903
CL904
(D-1) D901
LN1251C-TL
(TALLY)
R903
270
C901
220
6.3V
R901
470
R902
470
C902
0.1
F
C904
1500p B
C905
47
6.3V
TA:C
R910
15k
C903
1
16V
:A
R909
10k
R907
100k
R908
390k
2.7
1.8
1.8
3.1
4.6
IC901
BA7149F-E2
H.DRIVE
H.OSC
AFC
VIDEO AMP
/MIX
V.OUT
2
4.9
2.1
R917
120k
0.5%
R913
820
TH901
R914
220
V SIZE
(D-4)
IC901
H, V OSC
09

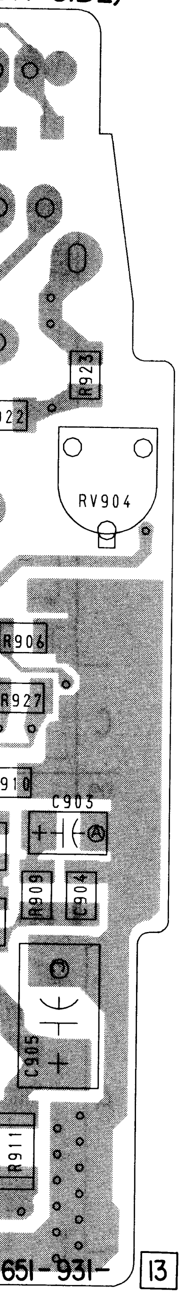
·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			
PB		⇨	


VF-65
(W/B EVF)
VF-73
(Color EVF)
LB-38
(Back Light)
LS-33
(Mecha Control)
VF-72
(Color EVF)
CD-137
(CCD Imager)
FP-49
(Steady Shot Sensor)
ZB-2
(Buzzer/Lithium Battery)
AU-184
(Audio)
LM-40
(Loading Motor)

However, the patterns
n the diagram.

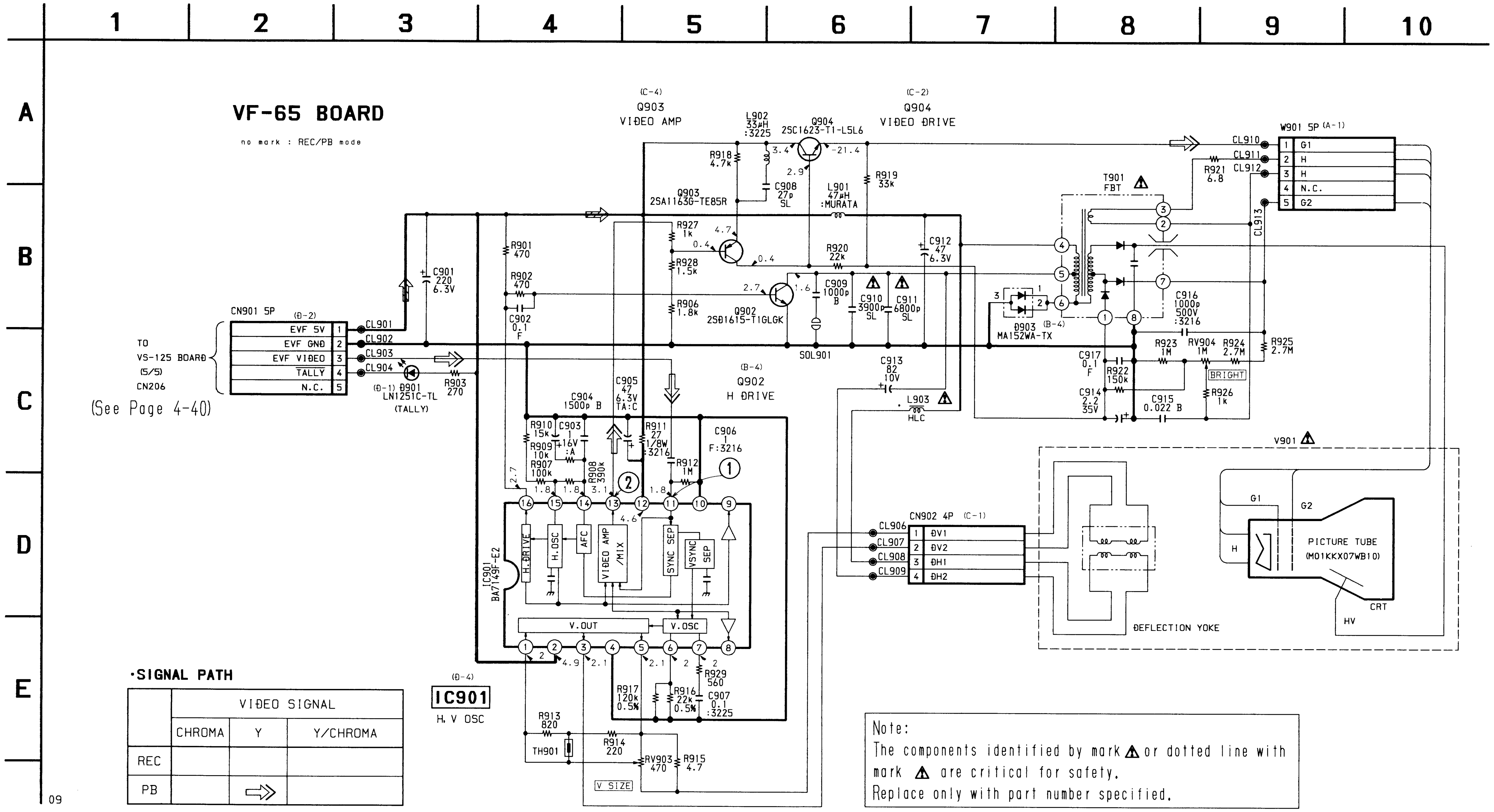
OR SIDE)



R923
RV904
R906
R927
C905
R909
C904
C905
R911
651-931-
13

VF-65 (W/B EVF) SCHEMATIC DIAGRAM

— Ref. No. VF-65 BOARD: 3000 series —

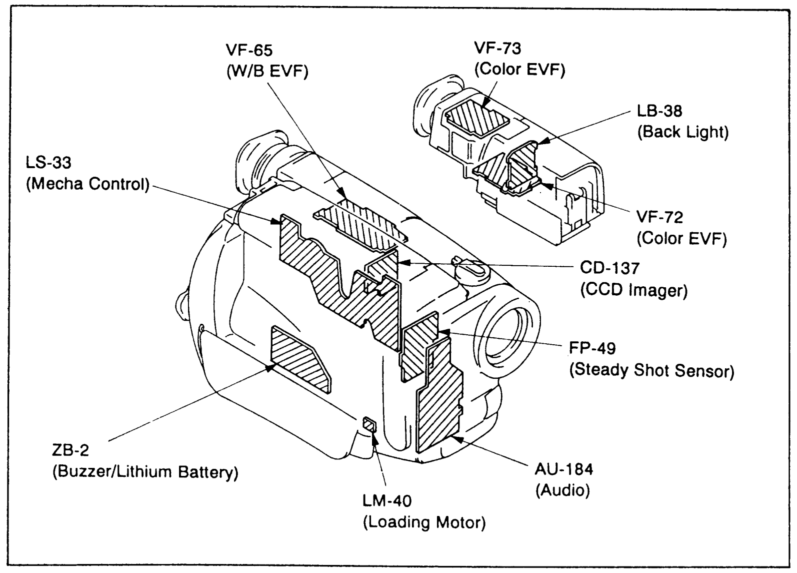


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
VF-65 BOARD
no mark : REC/PB mode
(C-4)
Q903
VIDEO AMP
(C-2)
Q904
VIDEO DRIVE
L902 33μH :3225
Q904 2SC1623-T1-L5L6
R918 4.7k
Q903 2SA1163G-TE85R
C908 27p SL
L901 47μH :MURATA
R919 33k
R927 1k
R928 1.5k
R906 1.8k
Q902 2SB1615-T1GLGK
R920 22k
C909 1000p B
C910 3900p SL
C911 6800p SL
C912 47 6.3V
SOL901
C913 82 10V
L903 HLC
(B-4)
Q902
H DRIVE
R901 470
R902 470
C902 0.1 F
C901 220 6.3V
CN901 5P (D-2)
EVF 5V 1
EVF GND 2
EVF VIDEO 3
TALLY 4
N.C. 5
CL901
CL902
CL903
CL904
TO VS-125 BOARD (5/5) CN206
(See Page 4-40)
(D-1) D901 LN1251C-TL (TALLY)
R903 270
C904 1500p B
C905 47 6.3V TA:C
R910 15k
C903 1 16V :A
R909 10k
R907 100k
R908 390k
R911 27 1/8W :3216
R912 1M
C906 1 F:3216
IC901 BA7149F-E2
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
(D-4)
IC901
H, V OSC
R913 820
TH901
R914 220
RV903 470
R915 4.7
V SIZE
R917 120k 0.5%
R916 22k 0.5%
R929 560
C907 0.1 :3225
T901 FBT
D903 MA152WA-TX (B-4)
C916 1000p 500V :3216
C917 0.1 F
R922 150k
C914 2.2 35V
C915 0.022 B
R923 1M
RV904 1M
R924 2.7M
R925 2.7M
BRIGHT
R926 1k
R921 6.8
CL910
CL911
CL912
CL913
W901 5P (A-1)
1 G1
2 H
3 H
4 N.C.
5 G2
V901
CN902 4P (C-1)
CL906
CL907
CL908
CL909
1 DV1
2 DV2
3 DH1
4 DH2
DEFLECTION YOKE
G1
G2
H
PICTURE TUBE (M01KKX07WB10)
CRT
HV
09

·SIGNAL PATH

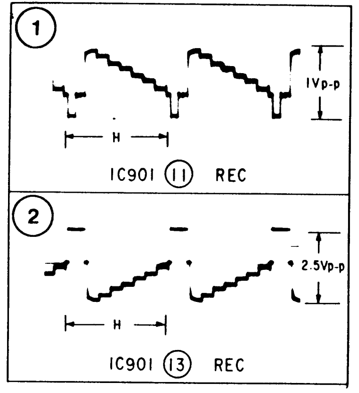
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			
PB		⇨	

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.



VF-65 (W/B EVF)
VF-73 (Color EVF)
LB-38 (Back Light)
LS-33 (Mecha Control)
VF-72 (Color EVF)
CD-137 (CCD Imager)
FP-49 (Steady Shot Sensor)
ZB-2 (Buzzer/Lithium Battery)
AU-184 (Audio)
LM-40 (Loading Motor)

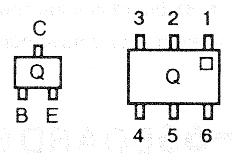
VF-65 BOARD



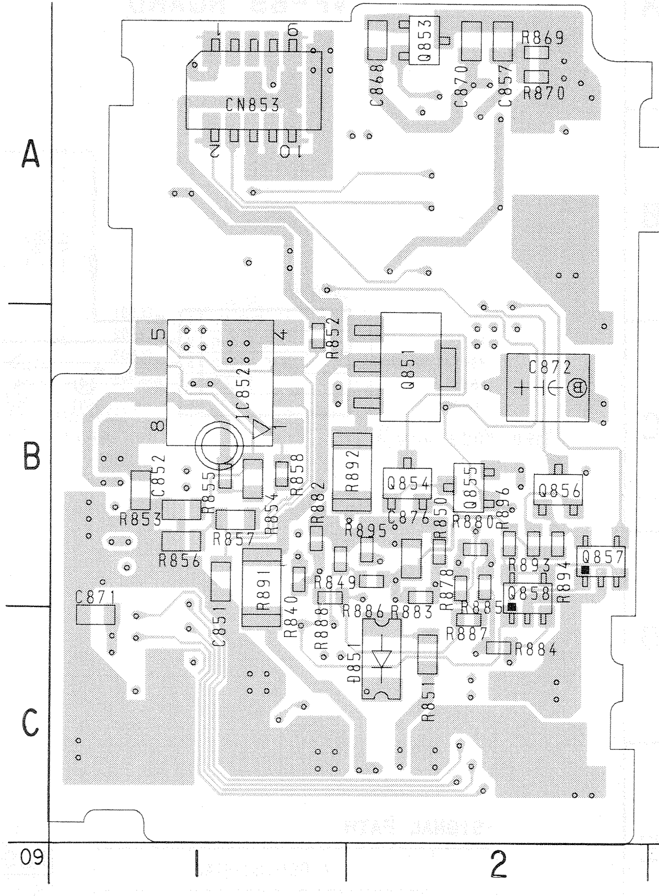
VF-72 (COLOR EVF), VF-73 (COLOR EVF), LB-38 (BACK LIGHT) PRINTED WIRING BOARDS

— Ref. No. VF-73 BOARS: 5000 series —

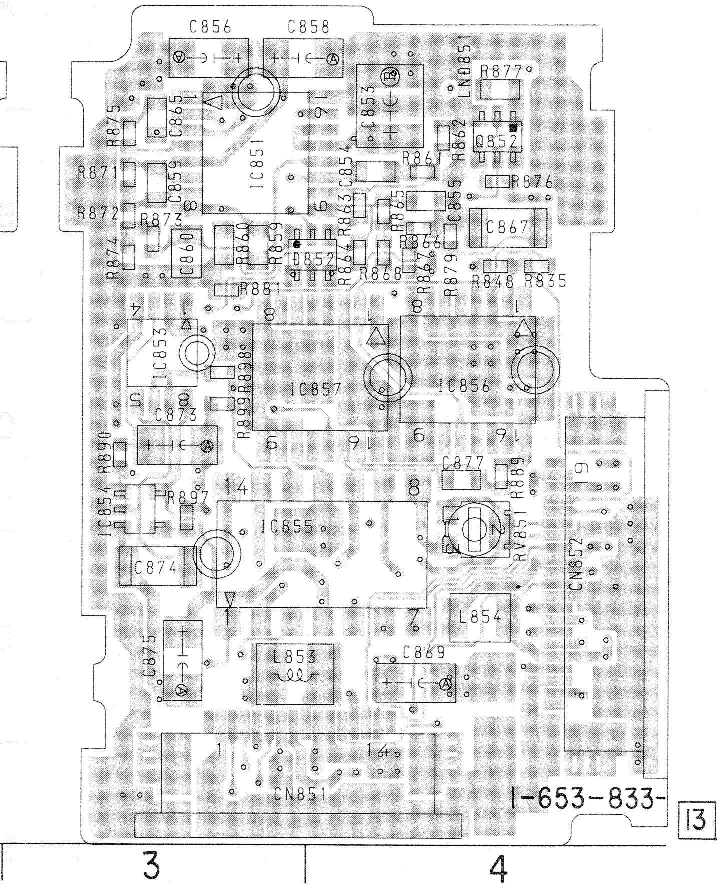
- **For printed wiring boards.**
- VF-72, VF-73 and LB-38 boards are a four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- Chip transistor


C
Q
B E
3 2 1
Q
4 5 6

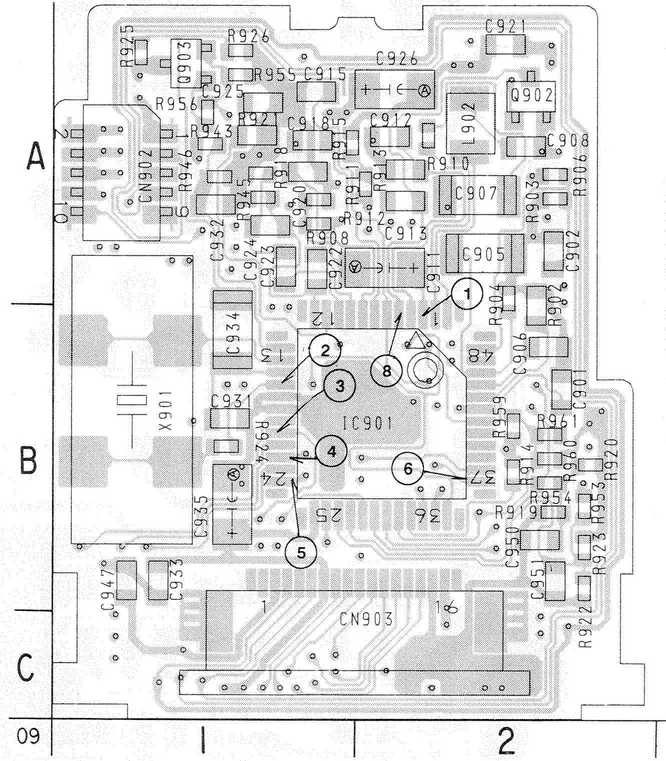
VF-72 BOARD (COMPONENT SIDE)


A
B
C
09
1
2
CN853
Q853
R869
R870
C868
C870
C857
IC852
Q851
C872
R852
C852
R853
R856
R857
C871
C851
R891
R892
Q854
Q855
Q856
Q857
Q858
R858
R854
R855
R840
R849
R851
R884
R887
R895

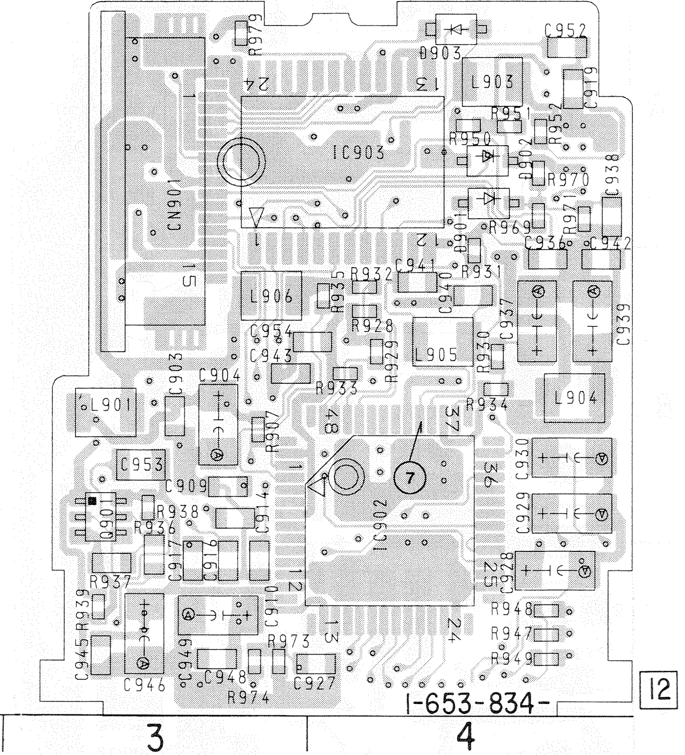
VF-72 BOARD (CONDUCTOR SIDE)


C856
C858
LND851
R877
Q852
R876
IC851
C853
C854
C855
C867
R875
R871
R872
R874
R873
C859
C860
R861
R862
R866
R868
R848
R835
R881
IC857
IC856
IC855
C873
C853
R890
R899
R898
C854
R897
C874
C877
C889
RV851
CN852
L854
C875
L853
C869
CN851
1
14
1-653-833-
13
3
4

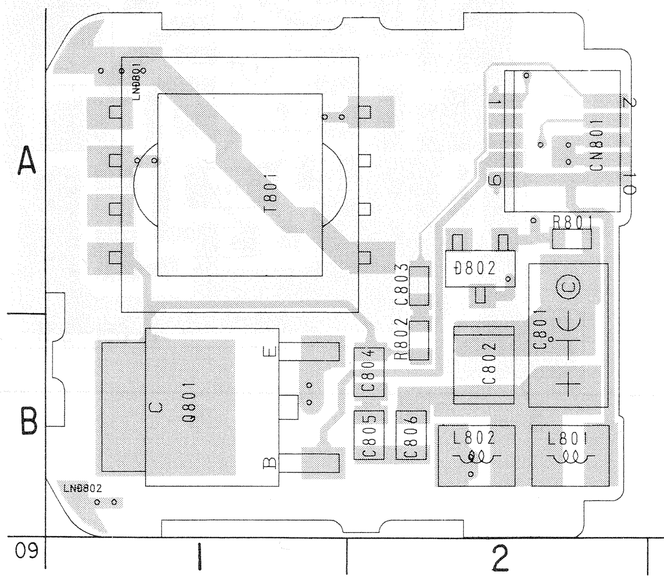
VF-73 BOARD (COMPONENT SIDE)


A
B
C
09
1
2
R925
R926
C921
C926
Q903
R955
C915
Q902
R956
CN902
C925
C917
C918
L902
C908
R910
C907
R903
R906
R908
C913
C905
C902
C934
IC901
X901
C931
R924
C935
C933
C947
CN903
C950
C951
R919
R954
R922
R923
R920
R959
R961
①
②
③
④
⑤
⑥
⑦
⑧

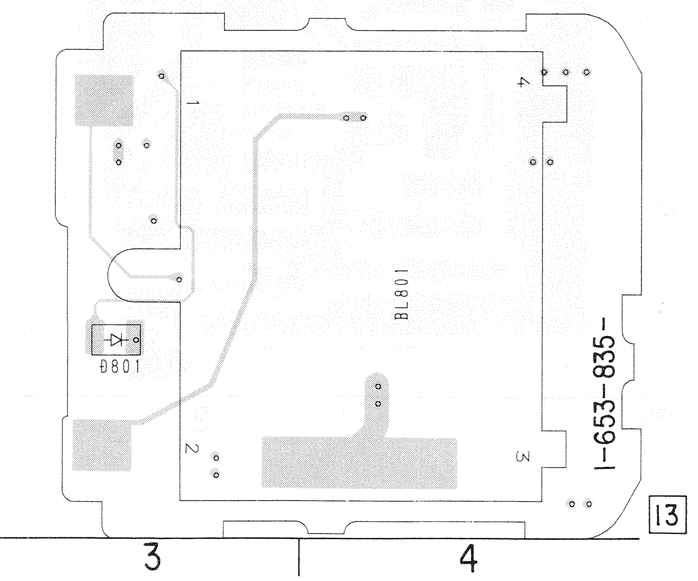
VF-73 BOARD (CONDUCTOR SIDE)

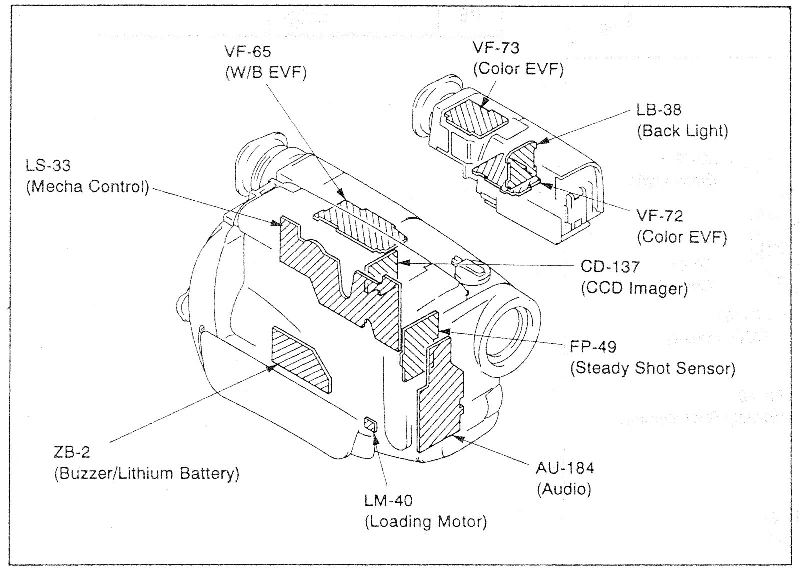

R939
Q903
C952
L903
C919
IC903
CN901
R950
R952
C938
R970
R969
C936
C942
L906
R932
C941
R931
C937
C939
R928
R929
R930
L905
R933
C904
L901
C903
C953
C909
C914
IC902
L904
R934
C930
C929
C928
R938
R936
C917
C916
R937
C910
R973
R948
R947
R949
C945
C946
C948
R974
C927
1-653-834-
12
3
4

LB-38 BOARD (COMPONENT SIDE)


A
B
09
1
2
LND801
T801
CN801
R801
D802
C803
R802
C801
C802
C804
Q801
C
E
B
C805
C806
L802
L801
LND802

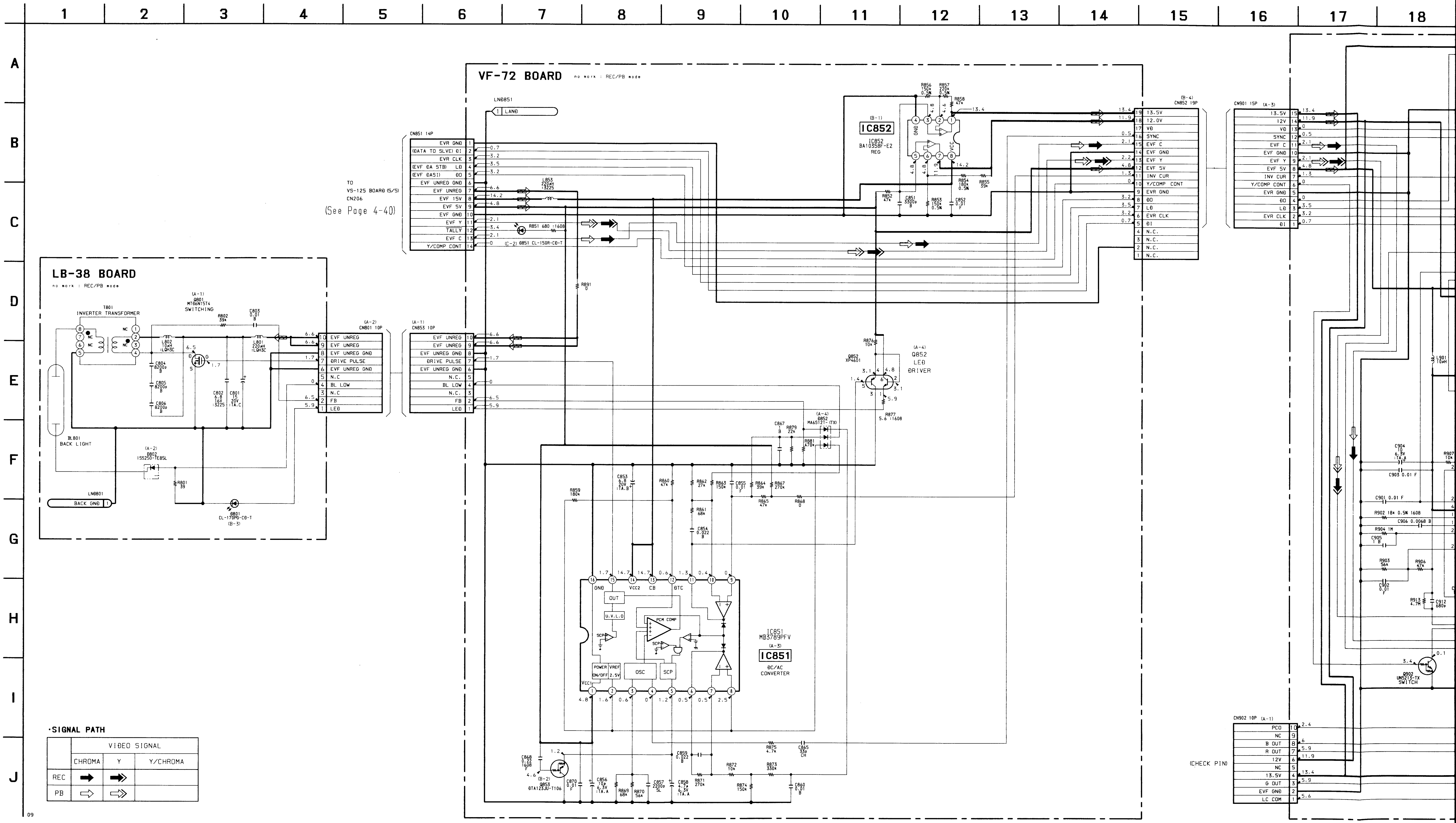
LB-38 BOARD (CONDUCTOR SIDE)


BL801
D801
1-653-835-
13
3
4


VF-65
(W/B EVF)
VF-73
(Color EVF)
LB-38
(Back Light)
LS-33
(Mecha Control)
VF-72
(Color EVF)
CD-137
(CCD Imager)
FP-49
(Steady Shot Sensor)
ZB-2
(Buzzer/Lithium Battery)
AU-184
(Audio)
LM-40
(Loading Motor)

VF-72 (COLOR EVF), VF-73 (COLOR EVF), LB-38 (BACK LIGHT) SCHEMATIC DIAGRAMS

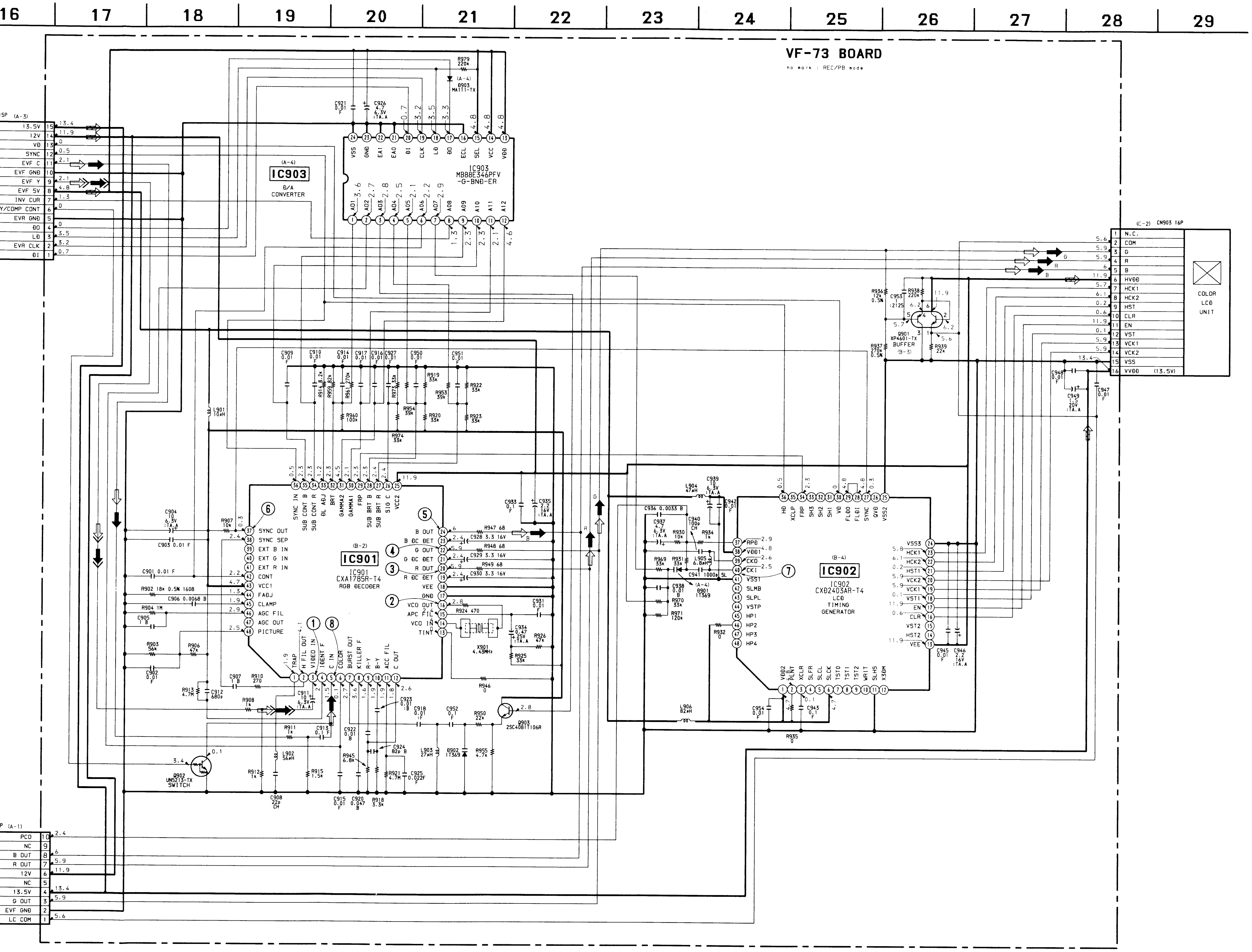
— Ref. No. VF-73 BOARS: 5000 series —



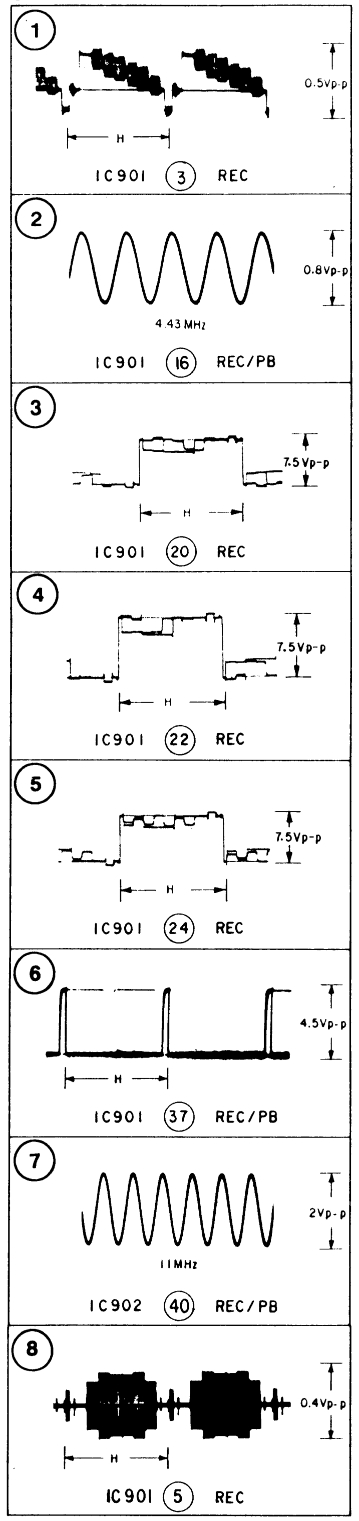
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
A B C D E F G H I J
VF-72 BOARD
no mark : REC/PB mode
LB-38 BOARD
no mark : REC/PB mode
LND851
LAND
CN851 14P
EVR GND
(DATA TO SLVE) DI
EVR CLK
(EVF DA STB) LD
(EVF DAS1) DO
EVF UNREG GND
EVF UNREG
EVF 15V
EVF 5V
EVF GND
EVF Y
TALLY
EVF C
Y/COMP CONT
TO VS-125 BOARD (S/S) CN206
(See Page 4-40)
L853 220μH :3225
R851 680 :1608
(C-2) D851 CL-150R-CD-T
R891 0
IC852
BA10358F-E2 REG
R856 150k 0.5%
R857 220k 0.5%
R858 47k
R852 47k
C851 3300p B
R853 150k 0.5%
C852 0.01 F
R854 180k 0.5%
R855 39k
(B-4) CN852 19P
13.5V
12.0V
VD
SYNC
EVF C
EVF GND
EVF Y
EVF 5V
INV CUR
Y/COMP CONT
EVR GND
DO
LD
EVR CLK
DI
N.C.
CN901 15P (A-3)
T801 INVERTER TRANSFORMER
(A-1) Q801 MTD6N15T4 SWITCHING
R802 39k
C803 0.01 B
L802 10μH :LQH3C
L801 220μH :LQH3C
C804 8200p B
C805 8200p B
C806 8200p B
C802 6.8 16V :3225
C801 15 20V :TA.C
(A-2) CN801 10P
EVF UNREG
EVF UNREG GND
DRIVE PULSE
N.C
BL LOW
FB
LED
(A-1) CN853 10P
BL801 BACK LIGHT
(A-2) D802 1SS250-TE85L
R801 39
LND801
BACK GND
D801 CL-170PG-CD-T (B-3)
R876 10k
Q852 XP4601
(A-4) Q852 LED DRIVER
R877 5.6 :1608
(A-4) D852 MA6S121-(TX)
C867 1 B
R879 22k
R881 470k
C853 6.8 20V :TA.B
R859 180k
R860 47k
R862 27k
R863 150k
C855 0.01 F
R864 39k
R867 270k
R865 47k
R868 0
R861 68k
C854 0.022 B
GND VCC2 CB DTC
OUT
U.V.L.O
PCM COMP
SCP
POWER ON/OFF
VREF 2.5V
OSC
VCC
IC851 MB3789PFV
(A-3) IC851 DC/AC CONVERTER
C868 0.22 1608 F
(B-2) Q853 DTA123JU-T106
C870 0.01 F
C856 10μ 6.3V :TA.A
R869 68k
R870 56k
C857 2200p SL
C858 4.7μ 6.3V :TA.A
R871 270k
C859 0.022 B
R872 10k
R875 4.7k
R873 330k
C865 33p CH
R874 150k
C860 0.01 B
C904 10 6.3V :TA.A
R907 10k
C903 0.01 F
C901 0.01 F
R902 18k 0.5% 1608
C906 0.0068 B
R904 1M
C905 1 B
R903 56k
R906 47k
C902 0.01 F
R913 4.7M
C912 680p
L901 10μH
Q902 UN5213-TX SWITCH
CN902 10P (A-1)
PCO
NC
B OUT
R OUT
12V
NC
13.5V
G OUT
EVF GND
LC COM
(CHECK PIN)

·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	⇛	
PB	⇨	⇛	

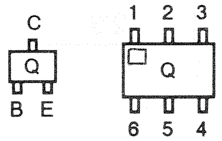

16
17
18
19
20
21
22
23
24
25
26
27
28
29
VF-73 BOARD
no mark : REC/PB mode
IC903
D/A CONVERTER
IC903 MB88E346PFV -G-BND-ER
IC901
CXA1785R-T4
RGB DECODER
IC902
CXD2403AR-T4
LCD TIMING GENERATOR
CN903 16P
COLOR LCD UNIT
Q901 XP4601-TX BUFFER
Q902 UN5213-TX SWITCH
Q903 2SC4081T106R
D903 MA111-TX
D901 1T369
D902 1T369
X901 4.43MHz
13.5V
12V
VD
SYNC
EVF C
EVF GND
EVF Y
EVF 5V
INV CUR
EVR GND
DO
LD
EVR CLK
DI
PCO
NC
B OUT
R OUT
12V
NC
13.5V
G OUT
EVF GND
LC COM
N.C.
COM
G
R
B
HVDD
HCK1
HCK2
HST
CLR
EN
VST
VCK1
VCK2
VSS
VVDD
SYNC OUT
SYNC SEP
EXT B IN
EXT G IN
EXT R IN
CONT
VCC1
FADJ
CLAMP
AGC FIL
AGC OUT
PICTURE
B OUT
B DC DET
G OUT
G DC DET
R OUT
R DC DET
GND
VEE
VCO OUT
APC FIL
VCO IN
TINT
TRAP
H FIL OUT
VIDEO IN
IDENT F
C IN
COLOR
BURST OUT
KILLER F
R-Y
B-Y
ACC FIL
C OUT
SYNC IN
SUB CONT B
SUB CONT R
BL ADJ
BRT
GAMMA2
GAMMA1
FRP
SUB BRT B
SUB BRT R
SIG C
VCC2
RPD
VDD1
CKO
CKI
VSS1
SLMB
SLPL
VSTP
HP1
HP2
HP3
HP4
VSS3
HCK1
HCK2
HST1
VCK2
VCK1
VST1
EN
CLR
VST2
HST2
VEE
HD
XCLP
FRP
SH3
SH2
SH1
VD
FLD0
FLD1
SYNC
DVD
VSS2
VDD2
PLST
XCLR
SLFR
SLCL
SLCK
TST0
TST1
TST2
WRIT
SLHS
X30M
VSS
GND
EA1
EA0
DI
CLK
LD
DO
ECL
SEL
VCC
VDD
AO1
AO2
AO3
AO4
AO5
AO6
AO7
AO8
AO9
A10
A11
A12

VF-73 BOARD

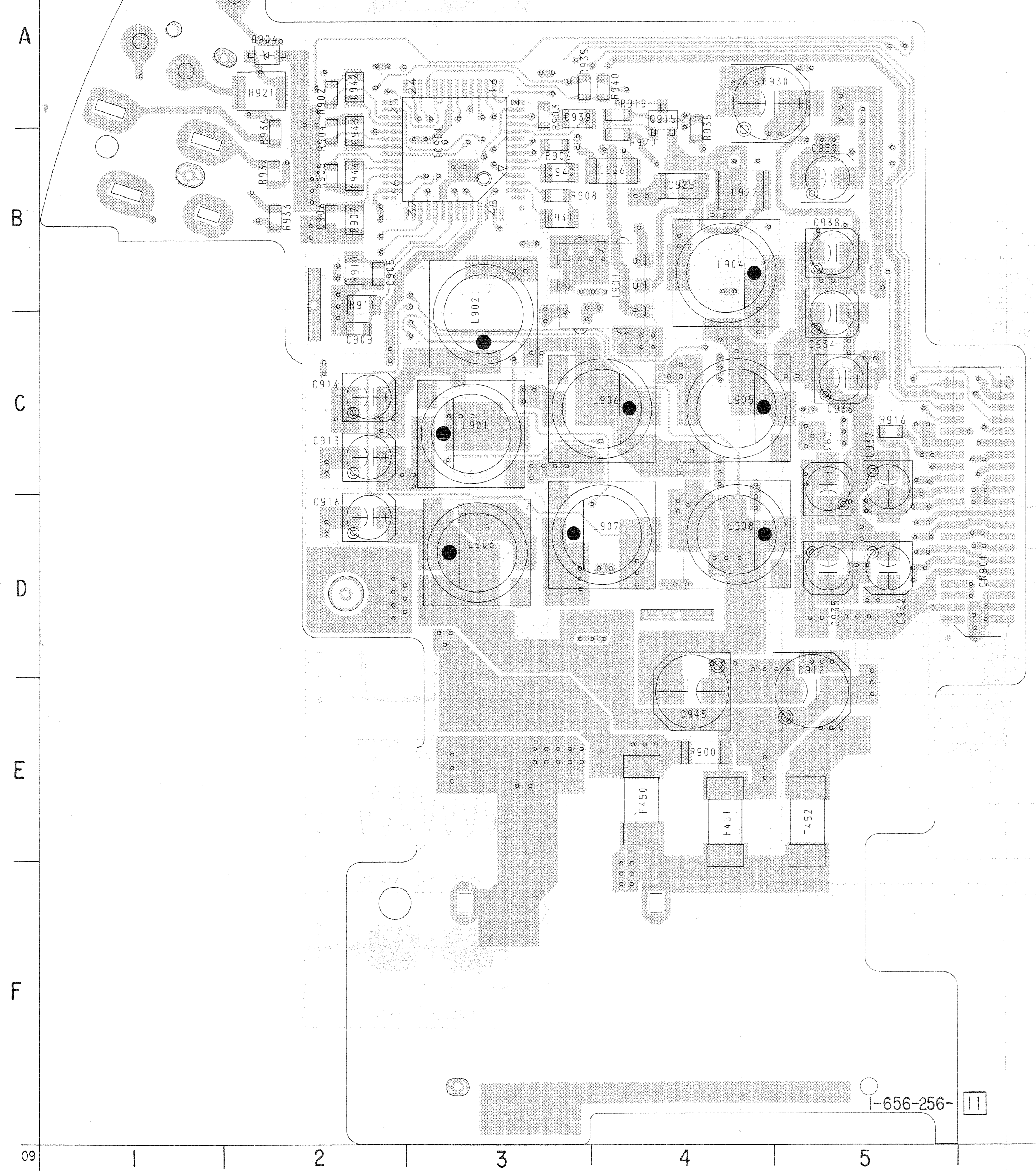

①
IC901 ③ REC
0.5Vp-p
H
②
4.43MHz
0.8Vp-p
IC901 ⑯ REC/PB
③
7.5Vp-p
IC901 ⑳ REC
④
7.5Vp-p
IC901 ㉒ REC
⑤
7.5Vp-p
IC901 ㉔ REC
⑥
4.5Vp-p
IC901 ㊲ REC/PB
⑦
11MHz
2Vp-p
IC902 ㊵ REC/PB
⑧
0.4Vp-p
IC901 ⑤ REC

DD-78 (POWER) PRINTED WIRING BOARD

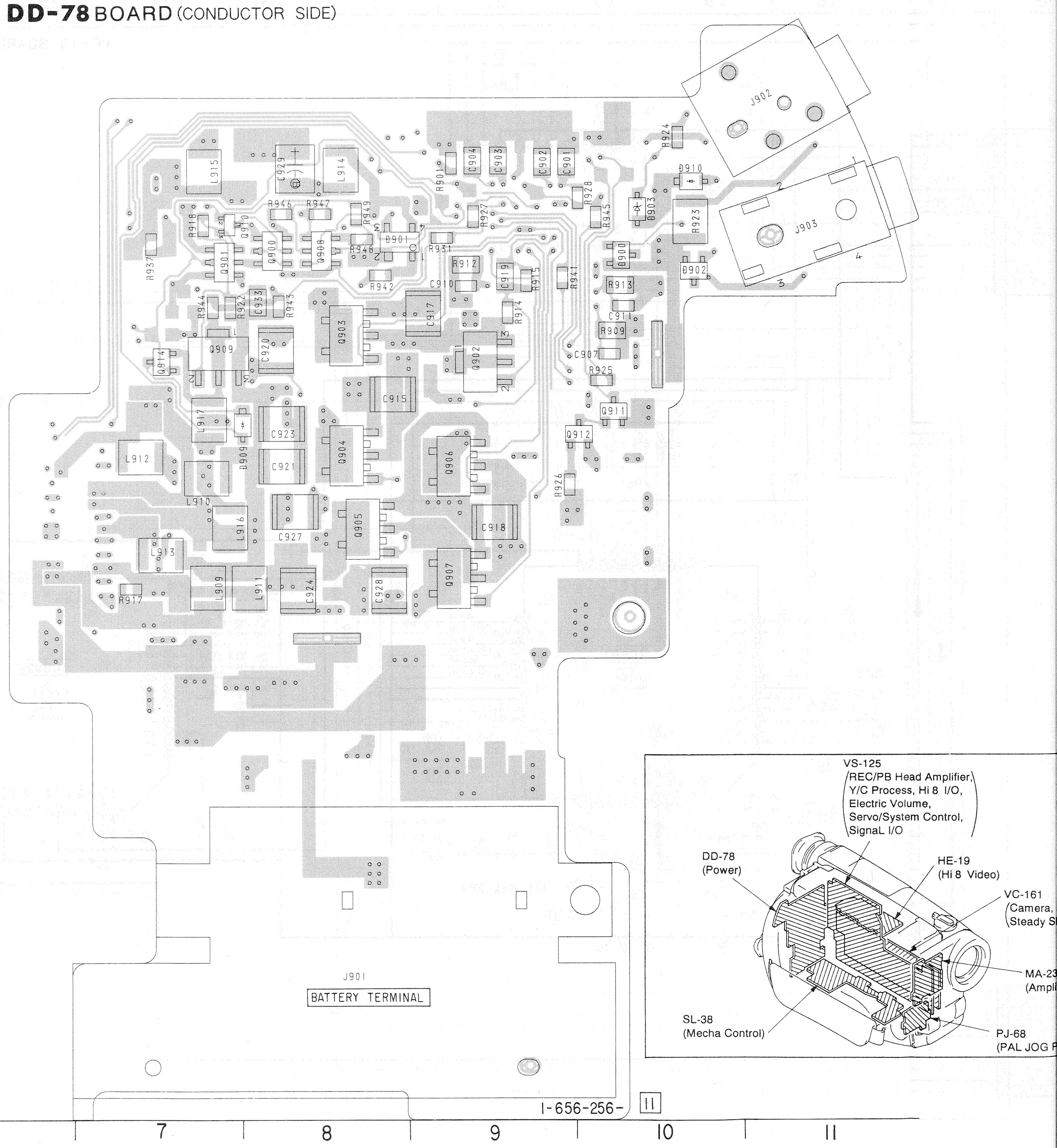
- **For printed wiring boards.**
- DD-78 board is a four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
- Chip transistor

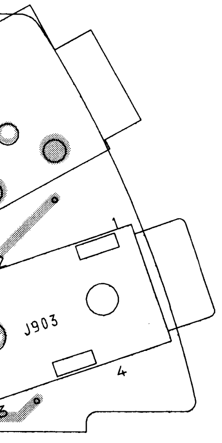

C
Q
B E
1 2 3
Q
6 5 4

DD-78 BOARD (COMPONENT SIDE)

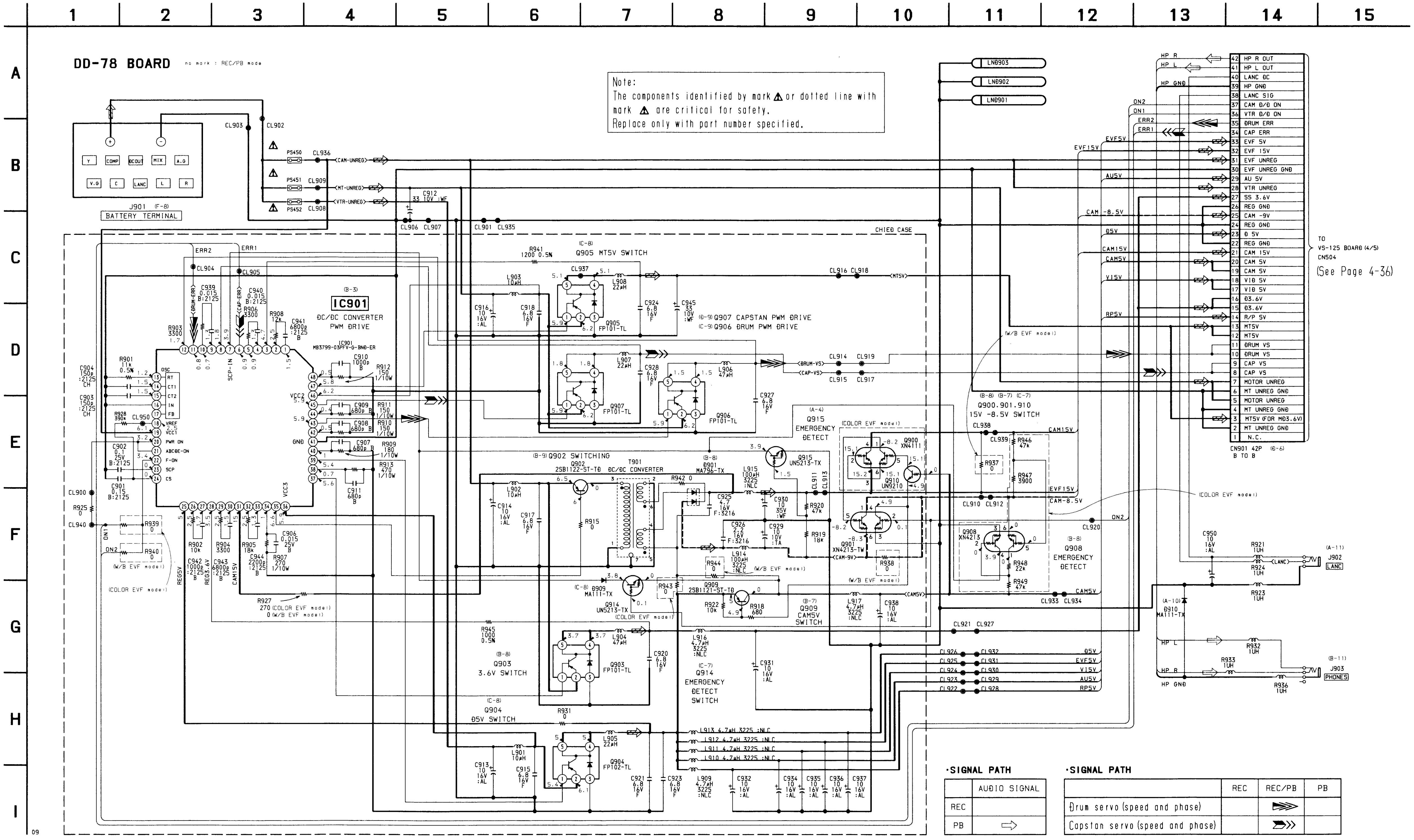

A
B
C
D
E
F
1
2
3
4
5
6
D904
R921
R936
R932
R933
R902
C942
C943
R904
R905
C944
C906
R907
IC901
R910
R911
C909
C908
R939
R940
R903
C939
R919
Q915
R938
R906
R920
C940
C926
R908
C941
C925
C922
C930
C950
C938
T901
L902
L904
C934
C914
C913
C916
L901
L906
L905
C936
R916
C933
C937
L903
L907
L908
C935
C932
CN901
C945
C912
R900
F450
F451
F452
I-656-256- 11
09

DD-78 BOARD (CONDUCTOR SIDE)


J902
J903
J910
R924
D910
D903
R923
D902
R945
R928
L915
C929
L914
C904
C903
C902
C901
R901
R927
R946
R947
R949
R918
Q910
Q901
Q900
Q908
R948
Q901
R931
R912
C919
R915
R941
D900
R913
R937
R942
C910
R944
R922
C933
R943
Q903
C917
R914
C911
R909
C907
R925
Q909
Q914
C920
Q902
C915
Q911
Q912
L917
C923
Q904
Q906
L912
D909
C921
R926
L910
L916
C927
Q905
C918
L913
Q907
R917
L909
L911
C924
C928
J901
BATTERY TERMINAL
I-656-256- 11
7
8
9
10
11
VS-125
(REC/PB Head Amplifier, Y/C Process, Hi 8 I/O, Electric Volume, Servo/System Control, SignaL I/O)
DD-78
(Power)
HE-19
(Hi 8 Video)
VC-161
(Camera,
(Steady S
MA-23
(Ampl
SL-38
(Mecha Control)
PJ-68
(PAL JOG F



DD-78 (POWER) SCHEMATIC DIAGRAM


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
DD-78 BOARD
no mark : REC/PB mode
J901 (F-8)
BATTERY TERMINAL
Y
COMP
BCOUT
MIX
A.G
V.O
C
LANC
L
R
P5450
P5451
P5452
CAM-UNREG
MT-UNREG
VTR-UNREG
CHIED CASE
IC901
DC/DC CONVERTER
PWM DRIVE
MB3799-03PFV-G-BND-ER
Q905 MT5V SWITCH
Q907 CAPSTAN PWM DRIVE
Q906 DRUM PWM DRIVE
Q902 SWITCHING
T901
DC/DC CONVERTER
Q915
EMERGENCY
DETECT
Q900.901.910
15V -8.5V SWITCH
Q908
EMERGENCY
DETECT
Q909
CAM5V
SWITCH
Q914
EMERGENCY
DETECT
SWITCH
Q903
3.6V SWITCH
Q904
D5V SWITCH
LN0903
LN0902
LN0901
CN901 42P (6-6)
B TO B
42 HP R OUT
41 HP L OUT
40 LANC DC
39 HP GND
38 LANC SIG
37 CAM D/D ON
36 VTR D/D ON
35 DRUM ERR
34 CAP ERR
33 EVF 5V
32 EVF 15V
31 EVF UNREG
30 EVF UNREG GND
29 AU 5V
28 VTR UNREG
27 SS 3.6V
26 REG GND
25 CAM -9V
24 REG GND
23 D 5V
22 REG GND
21 CAM 15V
20 CAM 5V
19 CAM 5V
18 VIO 5V
17 VIO 5V
16 D3.6V
15 D3.6V
14 R/P 5V
13 MT5V
12 MT5V
11 DRUM VS
10 DRUM VS
9 CAP VS
8 CAP VS
7 MOTOR UNREG
6 MT UNREG GND
5 MOTOR UNREG
4 MT UNREG GND
3 MT5V (FOR MD3.6V)
2 MT UNREG GND
1 N.C.
TO
VS-125 BOARD (4/5)
CN504
(See Page 4-36)
J902
LANC
J903
PHONES
(W/B EVF model)
(COLOR EVF model)

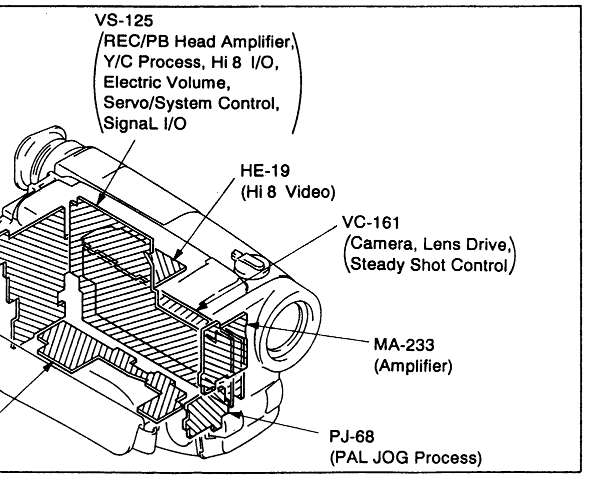
Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

·SIGNAL PATH

	AUDIO SIGNAL
REC	
PB	⇨

·SIGNAL PATH

	REC	REC/PB	PB
Drum servo (speed and phase)		⋙	
Capstan servo (speed and phase)		⋙	


VS-125
(REC/PB Head Amplifier, Y/C Process, Hi 8 I/O, Electric Volume, Servo/System Control, SignaL I/O)
HE-19
(Hi 8 Video)
VC-161
(Camera, Lens Drive, Steady Shot Control)
MA-233
(Amplifier)
PJ-68
(PAL JOG Process)

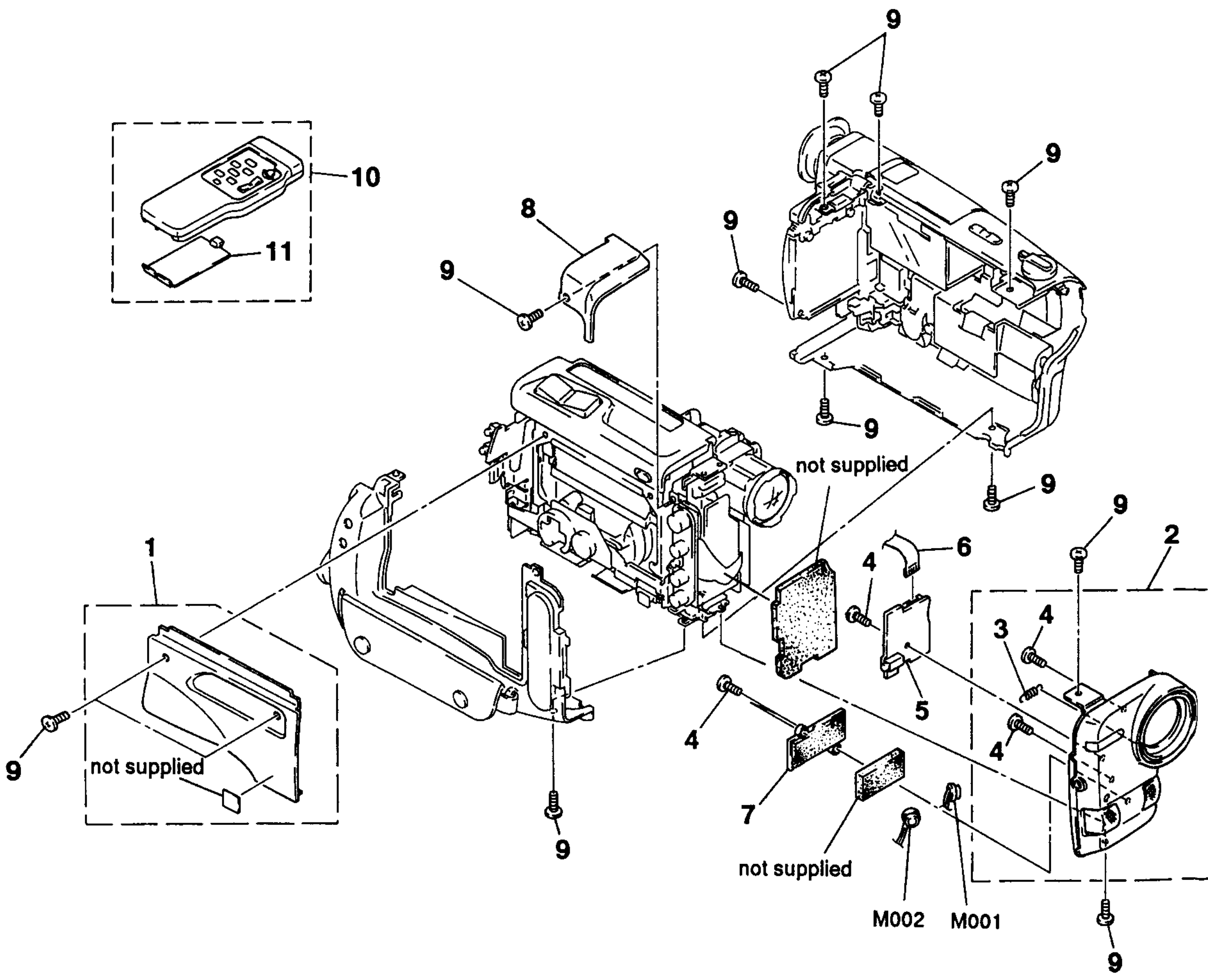
SECTION 5
REPAIR PARTS LIST

5-1. EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.
- Australian model is abbreviated as AUS.
  Hong Kong model is abbreviated as HK.
  Chinese model is abbreviated as CH.
  Tourist model is abbreviated as JE.

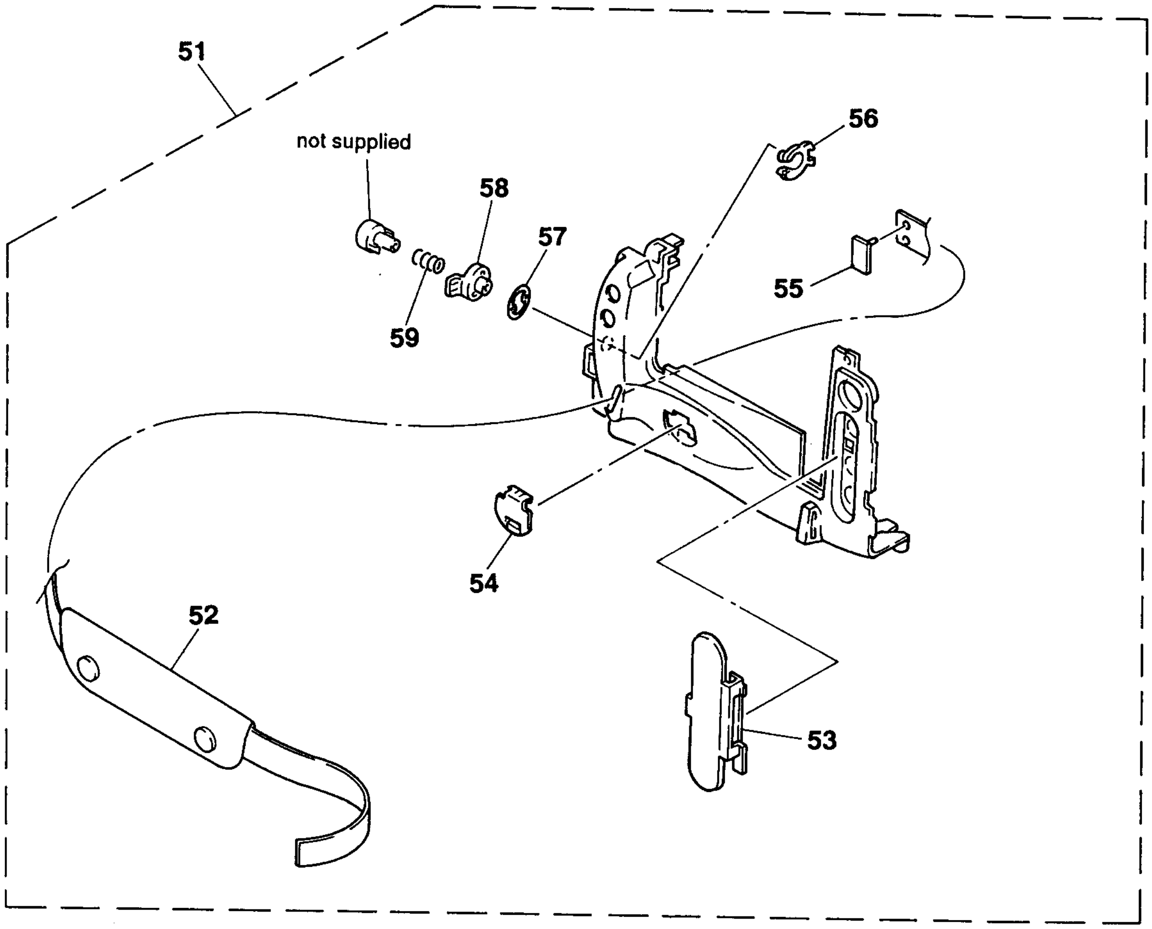
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1-1. FRONT PANEL BLOCK ASSEMBLY



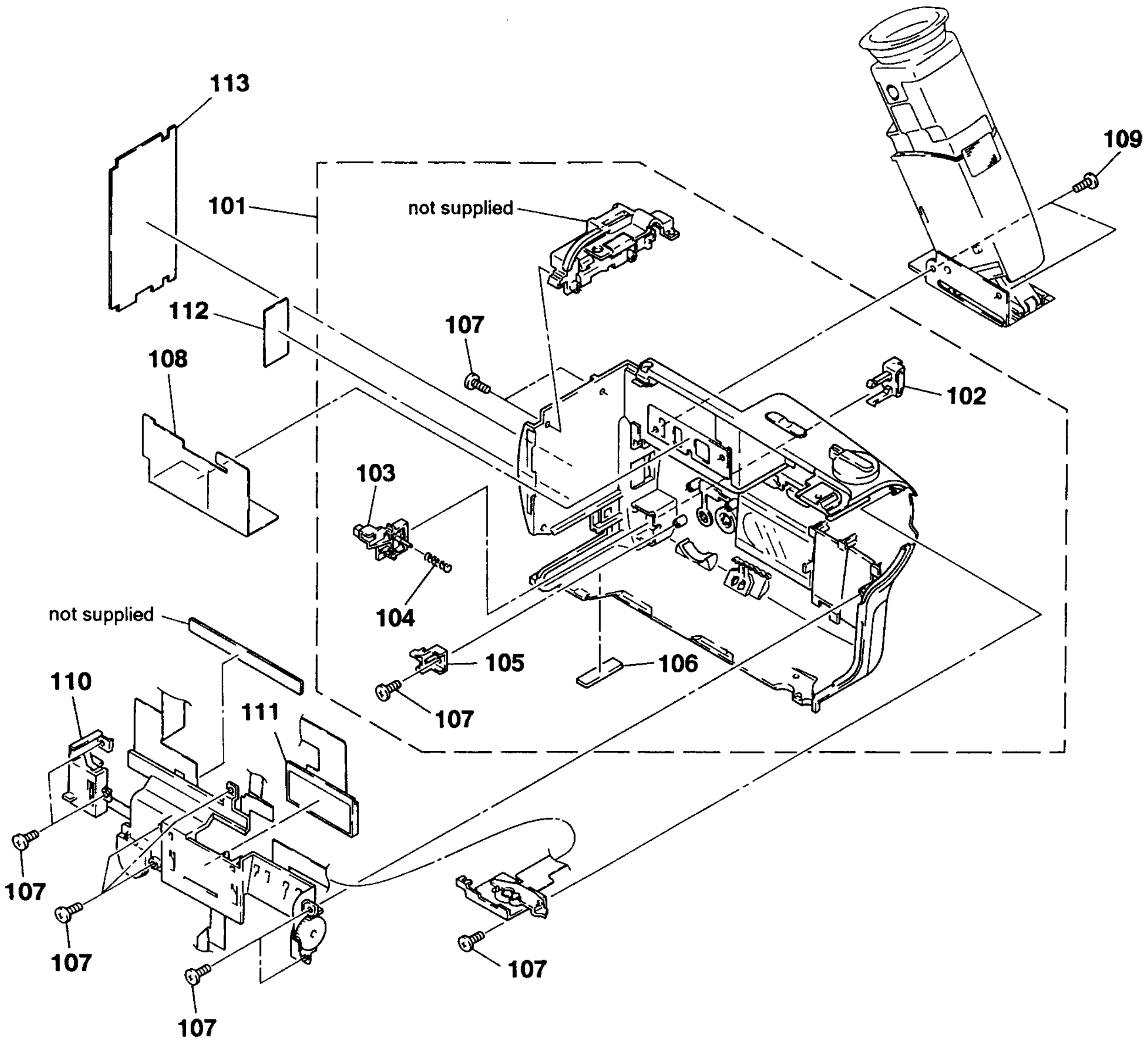
Ref. No.	Part No.	Description	Remark
1	X-3944-936-1	LID ASSY, CASSETTE (TR480E/TR580E/TR670E/TR675E)	
1	X-3944-987-1	LID ASSY, CASSETTE(TR680E/TR780E/TR880E)	
2	X-3944-934-1	PANEL ASSY, FRONT (TR580E:AEP, UK/TR780E)	
2	X-3945-024-1	PANEL ASSY, FRONT (TR580E:E, HK, AUS/TR670E/TR880E)	
2	X-3945-026-1	PANEL ASSY, FRONT (TR480E)	
2	X-3945-146-1	PANEL ASSY, FRONT (TR680E)	
2	X-3945-353-1	PANEL ASSY, FRONT (TR675E)	
3	3-964-798-01	SPRING, TENSION	
4	3-948-339-01	SCREW, TAPPING	
* 5	A-7066-398-A	MA-233P (H) BOARD, COMPLETE	
6	1-769-662-11	CABLE, FLEXIBLE FLAT 11P	
7	X-3944-935-1	HOLDER ASSY, MICROPHONE (EXCEPT TR780E)	
7	X-3945-261-1	HOLDER ASSY(TO ALS), MICROPHONE(TR780E)	
8	3-963-168-01	CAP, FRONT (EXCEPT TR780E)	
8	3-963-168-11	CAP, FRONT (TR780E)	
9	3-719-381-01	SCREW (M2X4)	
10	1-467-574-71	REMOTE COMMANDER (RMT-708)	
11	3-958-131-01	LID, BATTERY CASE (for RMT-708)	
M001	1-542-259-11	MICROPHONE, CAP (L-CH)	
M002	1-542-259-11	MICROPHONE, CAP (R-CH)	

5-1-2. CABINET (L) BLOCK ASSEMBLY



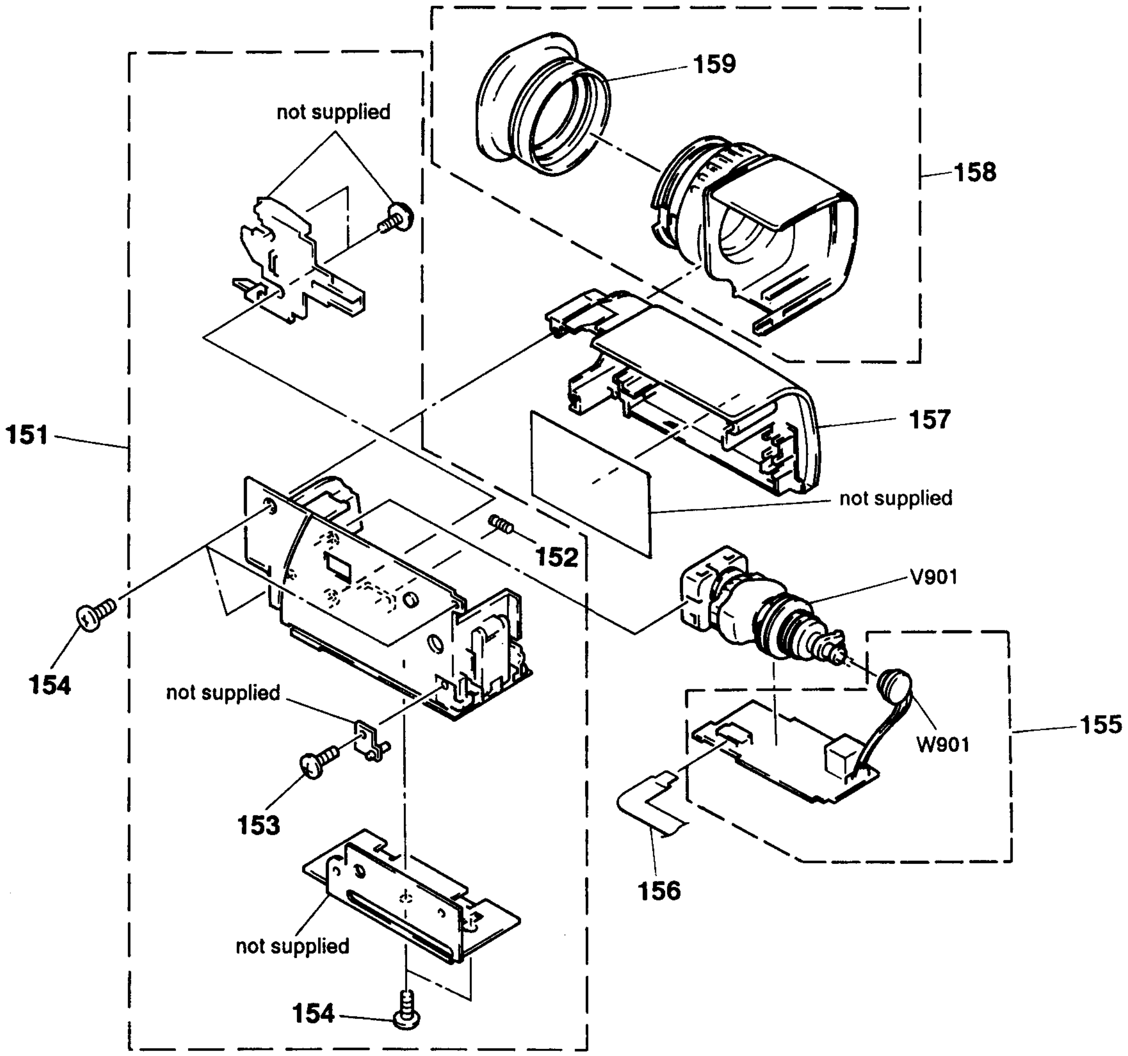
Ref. No.	Part No.	Description	Remark
51	X-3943-923-1	CABINET (L) ASSY (TR480E/TR580E/TR670E/TR675E)	
51	X-3944-037-1	CABINET (L) ASSY (TR680E/TR780E/TR880E)	
52	3-736-807-01	BELT, GRIP	
53	3-958-606-01	COVER, JACK	
54	3-958-608-01	LID, LITHIUM POWER	
55	3-942-895-01	STOPPER, BELT	
56	3-942-953-01	HOLDER, STAND-BY KNOB	
57	3-736-364-01	SPRING	
58	3-942-985-01	KNOB, STAND-BY	
59	3-578-221-00	SPRING, COMPRESSION	

5-1-3. CABINET (R) BLOCK ASSEMBLY



Ref. No.	Part No.	Description	Remark
101	X-3944-988-1	CABINET (R) ASSY (TR780E)	
101	X-3945-016-1	CABINET (R) ASSY (TR580E)	
101	X-3945-018-1	CABINET (R) ASSY (TR480E)	
101	X-3945-156-1	CABINET (R) ASSY (TR670E)	
101	X-3945-159-1	CABINET (R) ASSY (TR680E)	
101	X-3945-345-1	CABINET (R) ASSY (TR880E)	
101	X-3945-354-1	CABINET (R) ASSY (TR675E)	
102	3-958-618-01	BUTTON, BATTERY RELEASE	
103	3-958-620-01	CLAW, BATTERY LOCK	
104	3-426-508-00	SPRING, COMPRESSION	
105	3-958-650-01	RETAINER, BATTERY RELEASE	
106	3-949-008-01	SHEET, FOOT	
107	3-948-339-01	SCREW, TAPPING	
* 108	3-963-172-01	SHEET (2), HARNESS	
109	3-719-381-01	SCREW (M2X4)	
110	1-473-173-11	SWITCH BLOCK, CONTROL (CK) (TR580E/TR670E/TR675E)	
110	1-473-173-21	SWITCH BLOCK, CONTROL (CK) (TR780E/TR880E)	
110	1-473-173-31	SWITCH BLOCK, CONTROL (CK) (TR680E)	
110	1-473-173-41	SWITCH BLOCK, CONTROL (CK) (TR480E)	
111	1-810-535-11	DISPLAY PANEL, LIQUID CRYSTAL	
* 112	3-704-235-01	LABEL, CAUTION (TR580E:UK/TR680E:UK/TR780E:UK)	
113	3-964-960-01	COVER, BATT (TR580E:AEP, UK/TR680E/TR780E)	

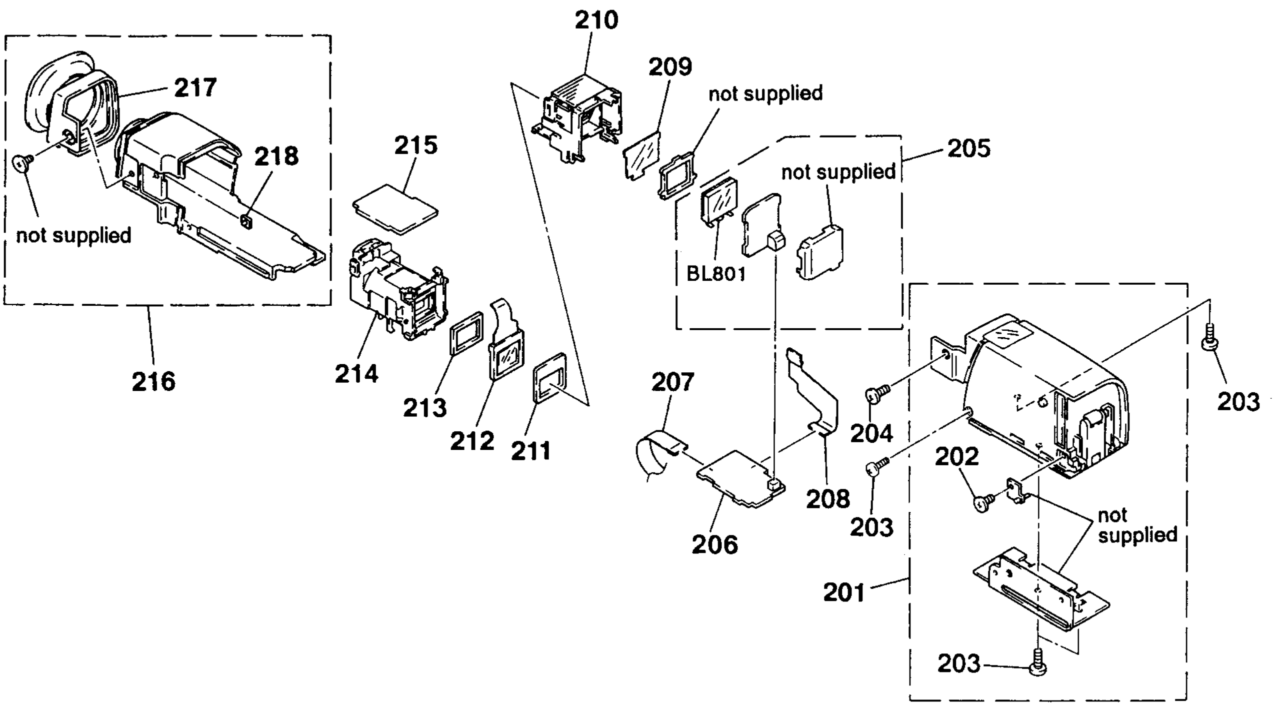
5-1-4. W/B EVF BLOCK ASSEMBLY (TR480E/TR580E/TR680E/TR780E)


159
not supplied
158
151
157
not supplied
152
V901
154
not supplied
155
W901
153
156
not supplied
154

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

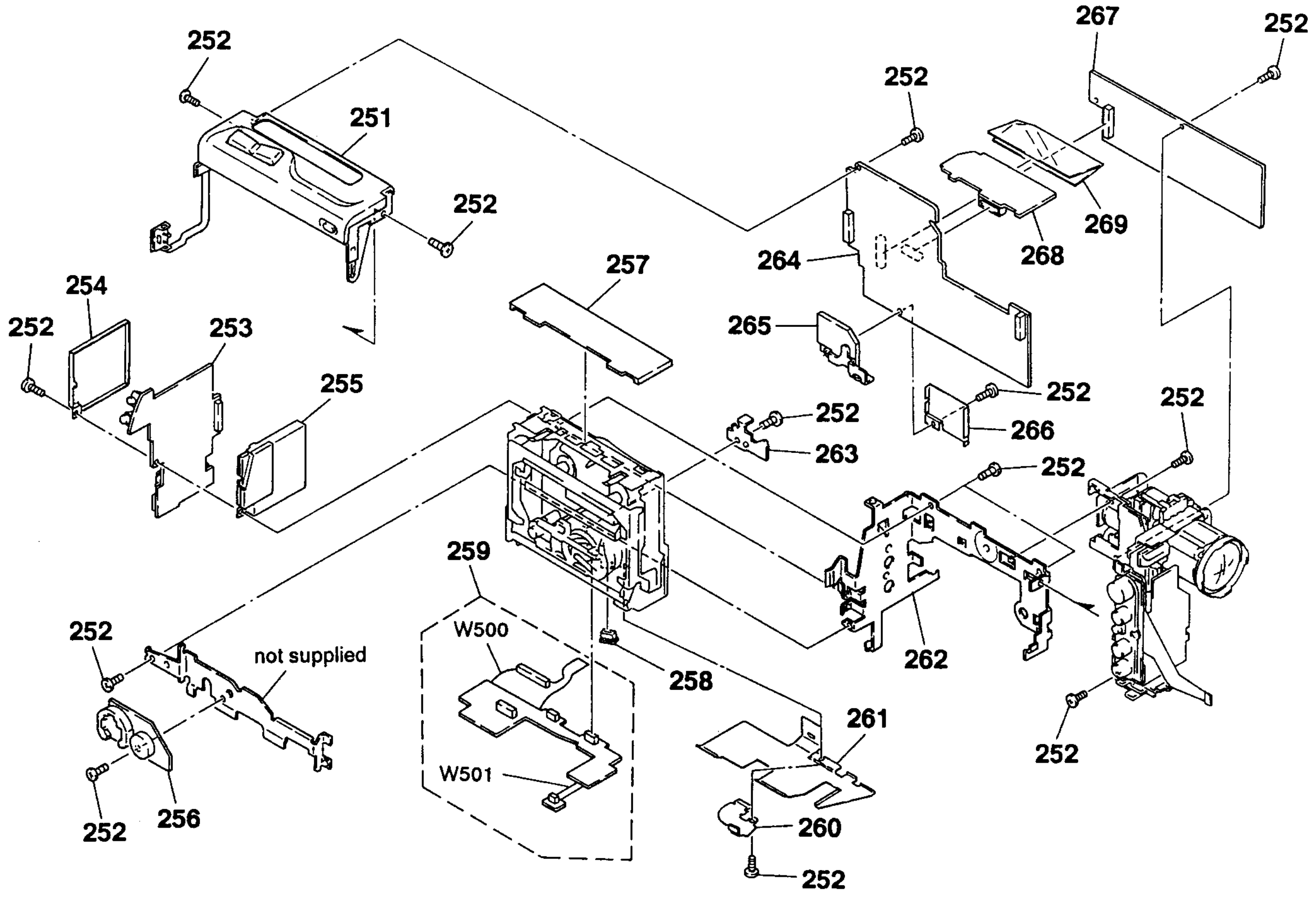
Ref. No.	Part No.	Description	Remark
151	X-3944-937-1	CABINET (L) (B) ASSY, EVF	
152	3-302-492-00	SPRING, COMPRESSION	
153	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
154	3-948-339-01	SCREW, TAPPING	
* 155	A-7066-045-A	VF-65P BOARD, COMPLETE	
156	1-651-894-11	FP-86 FLEXIBLE BOARD	
157	3-963-161-01	CABINET (R) (B), EVF	
158	A-7082-823-A	HOLDER BLOCK ASSY, FINDER	
159	3-963-160-01	EYE CUP (DM)	
⚠V901	1-452-673-31	CRT ASSY (M01KXX90WB)	
⚠W901	1-540-019-21	SOCKET ASSY, CRT	

5-1-5. COLOR EVF BLOCK ASSEMBLY (TR670E/TR675E/TR880E)


210
209
not supplied
205
not supplied
217
218
215
not supplied
BL801
216
214
213
212
211
207
204
203
202
208
203
206
not supplied
201
203

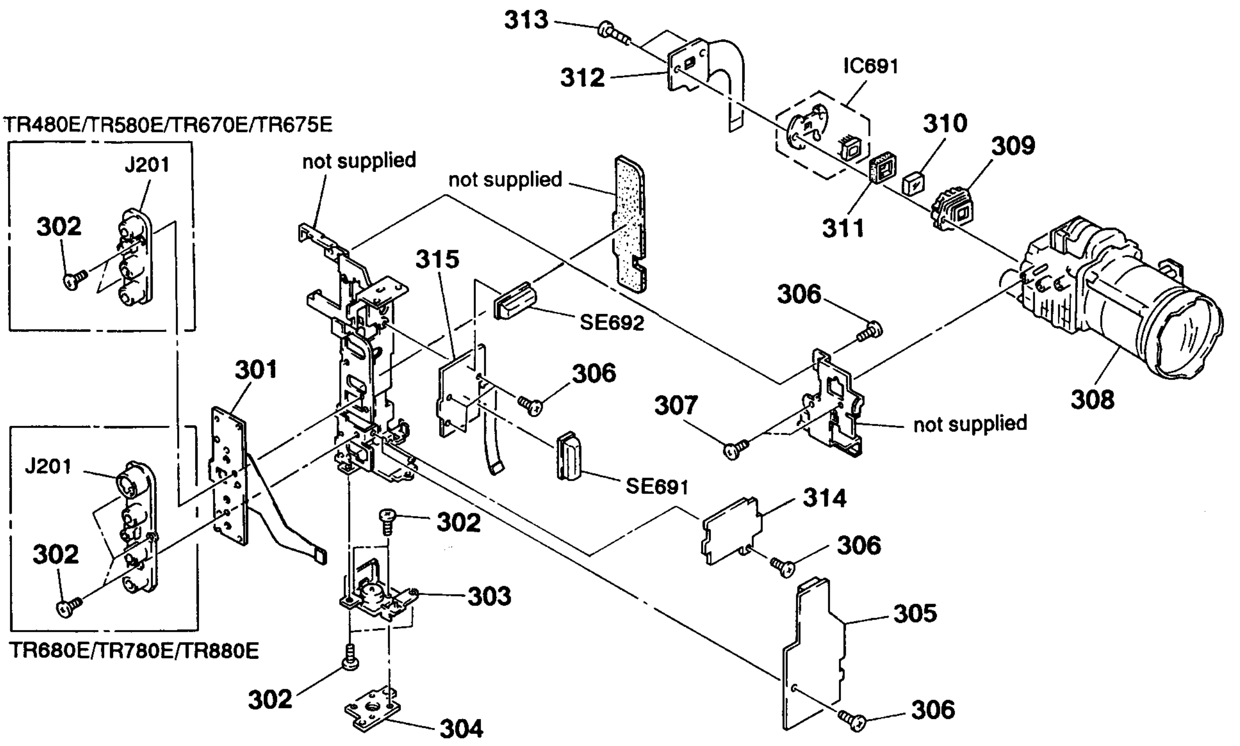
Ref. No.	Part No.	Description	Remark
201	X-3945-012-1	CABINET ASSY, EVF FRONT	
202	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
203	3-948-339-01	SCREW, TAPPING	
204	3-719-381-01	SCREW (M2X4)	
* 205	A-7072-267-A	LB-38P (MC) BOARD, COMPLETE	
* 206	A-7072-268-A	VF-72P (MC) BOARD, COMPLETE	
207	1-656-481-11	FP-292 FLEXIBLE BOARD	
208	1-656-480-11	FP-291 FLEXIBLE BOARD	
* 209	3-960-322-01	PLATE, CONDENSE, BL	
210	X-3945-134-1	HOLDER ASSY, PRISM	
* 211	3-960-347-01	CUSHION (2), LCD	
212	8-753-015-00	LCX005AK-4	
* 213	3-960-302-01	CUSHION (1), LCD	
214	X-3945-014-1	LENS ASSY, VF	
* 215	A-7072-269-A	VF-73P (MC) BOARD, COMPLETE	
216	X-3945-150-1	CABINET ASSY, EVF REAR	
217	3-963-603-01	CUP, EYE	
218	3-718-233-01	NUT, PLATE	
BL801	1-517-325-11	LANP, FLUORESCENT (0.55 INCH)	

5-1-6. MAIN BOARDS ASSEMBLY



Ref. No.	Part No.	Description	Remark
251	1-473-132-11	SWITCH BLOCK, CONTROL (FK) (TR480E/TR580E/TR670E/TR675E/TR680E)	
251	1-473-132-21	SWITCH BLOCK, CONTROL (FK)(TR780E)	
251	1-473-132-31	SWITCH BLOCK, CONTROL (FK)(TR880E)	
252	3-713-786-21	SCREW (M2X3)	
* 253	A-7066-394-A	DD-78P (H) BOARD, COMPLETE (TR480E/TR580E/TR680E/TR780E)	
* 253	A-7066-478-A	DD-78P (MC) BOARD, COMPLETE (TR670E/TR675E/TR880E)	
* 254	3-958-925-01	CASE (MAIN), SHIELD, DD	
* 255	3-958-926-01	CASE (LID), SHIELD, DD	
* 256	1-651-920-11	ZB-2 BOARD	
257	3-958-341-01	COVER, LS	
258	1-691-471-11	CONNECTOR, TRANSLATION 11P	
* 259	A-7072-283-A	SL-38 (FD) BOARD, COMPLETE	
260	1-651-891-11	FP-52 FLEXIBLE BOARD (TR480E/TR580E/TR670E/TR675E)	
260	1-651-892-11	FP-53 FLEXIBLE BOARD (TR680E/TR780E/TR880E)	
* 261	3-958-928-01	PLATE, SHIELD, RP	
* 262	3-958-345-01	FRAME (U)	
* 263	3-958-667-01	FRAME (B)	
* 264	A-7066-393-A	VS-125P (H) BOARD, COMPLETE (TR780E)	
* 264	A-7066-411-A	VS-125P (L) BOARD, COMPLETE (TR480E)	
* 264	A-7066-414-A	VS-125P(M) BOARD, COMPLETE (TR580E:AEP, UK)	
* 264	A-7066-479-A	VS-125P (MC) BOARD, COMPLETE (TR670E)	
* 264	A-7066-480-A	VS-125P (HL) BOARD, COMPLETE (TR680E)	
* 264	A-7066-549-A	VS-125P (HC) BOARD, COMPLETE (TR880E)	
* 264	A-7085-036-A	VS-125P (ME) BOARD, COMPLETE (TR580E:E, HK, AUS)	
* 264	A-7085-038-A	VS-125P (MCN) BOARD, COMPLETE (TR675E)	
* 265	X-3943-976-1	SHIELD (MAIN) ASSY, RP	
* 266	3-958-924-01	CASE (LID), SHIELD, RP	
* 267	A-7066-395-A	VC-161P (H) BOARD, COMPLETE (TR780E)	
* 267	A-7066-412-A	VC-161P (L) BOARD, COMPLETE (TR480E)	
* 267	A-7066-416-A	VC-161P(M) BOARD, COMPLETE (TR580E:AEP, UK)	
* 267	A-7066-481-A	VC-161P (HL) BOARD, COMPLETE (TR680E)	
* 267	A-7085-035-A	VC-161P (MCE) BOARD, COMPLETE (TR670E/TR880E)	
* 267	A-7085-037-A	VC-161P (ME) BOARD, COMPLETE (TR580E:E, HK, AUS)	
* 267	A-7085-039-A	VC-161P (MCN) BOARD, COMPLETE (TR675E)	
* 268	A-7066-396-A	HE-19P (H) BOARD, COMPLETE (TR680E/TR780E/TR880E)	
* 269	3-963-171-01	SHEET, HE (TR680E/TR780E/TR880E)	
W500	1-651-889-11	FP-48 FLEXIBLE BOARD	
W501	1-642-186-11	FP-437 FLEXIBLE BOARD	

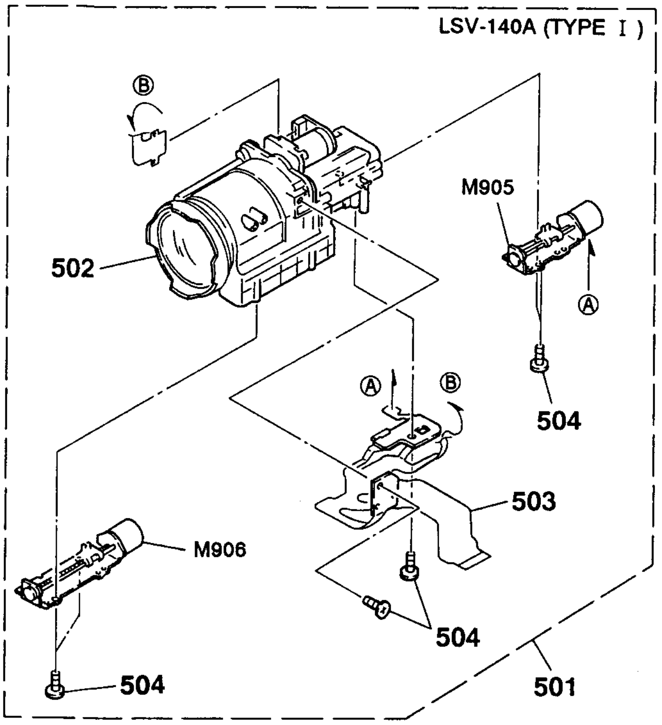
5-1-7. CCD BLOCK ASSEMBLY

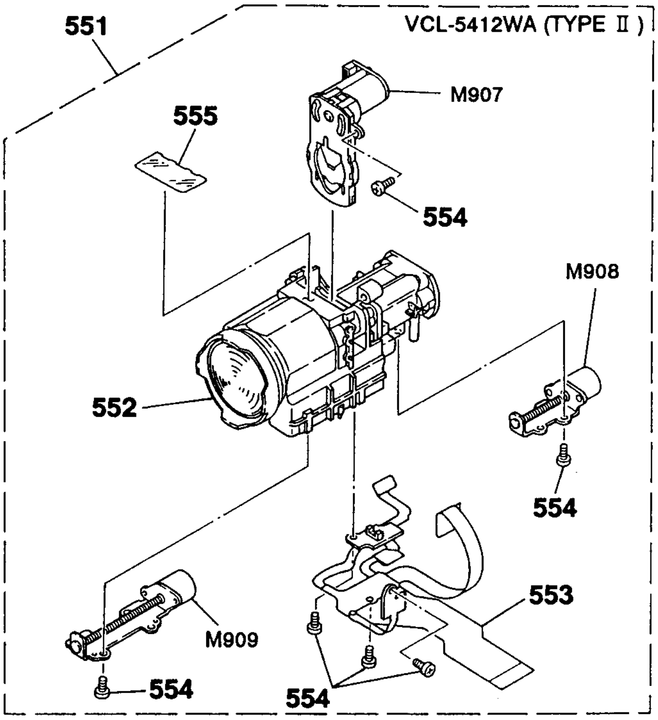

313
312
IC691
310
309
311
TR480E/TR580E/TR670E/TR675E
J201
302
not supplied
not supplied
315
SE692
306
306
301
307
not supplied
308
J201
SE691
314
302
306
302
303
305
TR680E/TR780E/TR880E
302
304
306

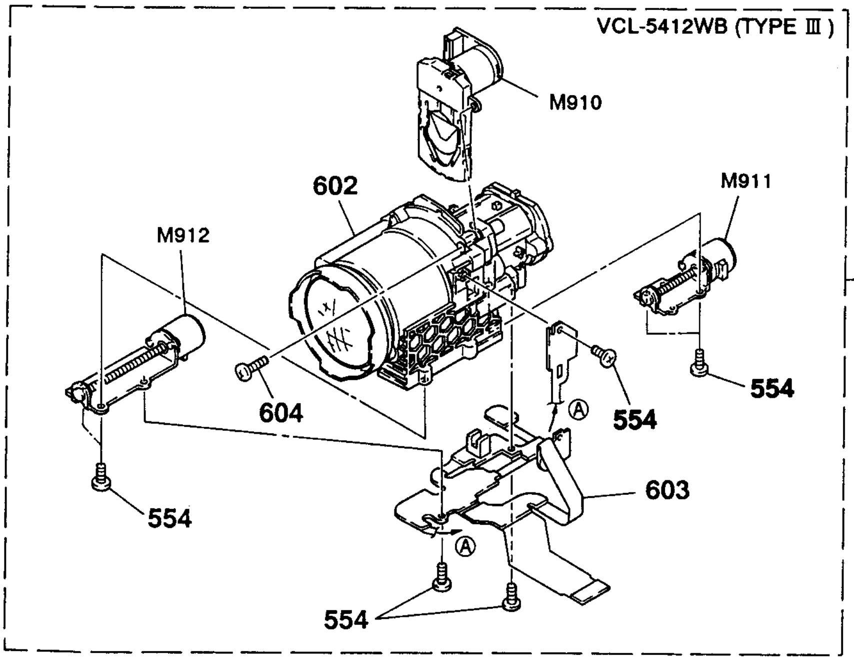
Be sure to read "Note on the CCD Imager replacement" on page 4-6 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
301	1-657-049-11	FP-44 FLEXIBLE BOARD	
302	3-719-381-01	SCREW (M2X4)	
303	3-958-310-11	HOLDER, TRIPOD	
304	3-958-286-01	SHEET METAL, TRIPOD	
* 305	A-7066-392-A	AU-184P (H) BOARD, COMPLETE	
306	3-713-786-21	SCREW (M2X3)	
307	3-948-339-01	SCREW, TAPPING	
308	1-547-716-11	LENS, ZOOM (VCL-5412WA)(TYPE II)	
308	1-547-739-11	LENS, ZOOM (VCL-5412WB)(TYPE III)	
308	8-848-704-01	DEVICE, LENS LSV-140A (TYPE I)	
309	3-946-856-01	ADAPTOR (H), CCD FITTING	
310	1-547-558-21	FILTER BLOCK, OPTICAL (TR480E)	
310	1-547-735-51	FILTER BLOCK, OPTICAL (EXCEPT TR480E)	
311	3-946-857-01	RUBBER (S), SEAL (TR480E)	
311	3-960-149-01	RUBBER (3), SEAL (EXCEPT TR480E)	
* 312	A-7072-134-A	CD-137 A BOARD, COMPLETE (EXCEPT TR480E)	
* 312	A-7072-135-A	CD-137 B BOARD, COMPLETE (TR480E)	
313	3-947-268-01	SCREW (P TIGHT)(2), TAPPING +B	
* 314	A-7066-397-A	PJ-68P (H) BOARD, COMPLETE (TR670E/TR675E/TR680E/TR780E/TR880E)	
* 314	A-7066-417-A	PJ-68P(M) BOARD, COMPLETE (TR480E/TR580E)	
315	1-651-890-11	FP-49 FLEXIBLE BOARD (TR580E/TR670E/TR675E/TR780E/TR880E)	
J201	1-537-373-51	JACK BOARD ASSY (TR680E/TR780E/TR880E)	
J201	1-537-415-11	TERMINAL BOARD (TR480E/TR580E/TR670E/TR675E)	
IC691	A-7030-369-A	CCD BLOCK ASSY (055 SERVICE)(CCD IMAGER) (TR480E)	
IC691	A-7030-371-A	CCD BLOCK ASSY (059 SERVICE)(CCD IMAGER) (TR680E)	
IC691	A-7030-495-A	CCD BLOCK ASSY (060 SERVICE)(CCD IMAGER) (TR580E/TR670E/TR675E/TR780E/TR880E)	
SE691	1-810-725-31	SENSOR, ANGULAR VELOCITY (TR580E/TR670E/TR675E/TR780E/TR880E)	
SE692	1-810-725-41	SENSOR, ANGULAR VELOCITY (TR580E/TR670E/TR675E/TR780E/TR880E)	

5-1-8. ZOOM LENS ASSEMBLIES (LSV-140A) (VCL-5412WA) (VCL-5412WB)

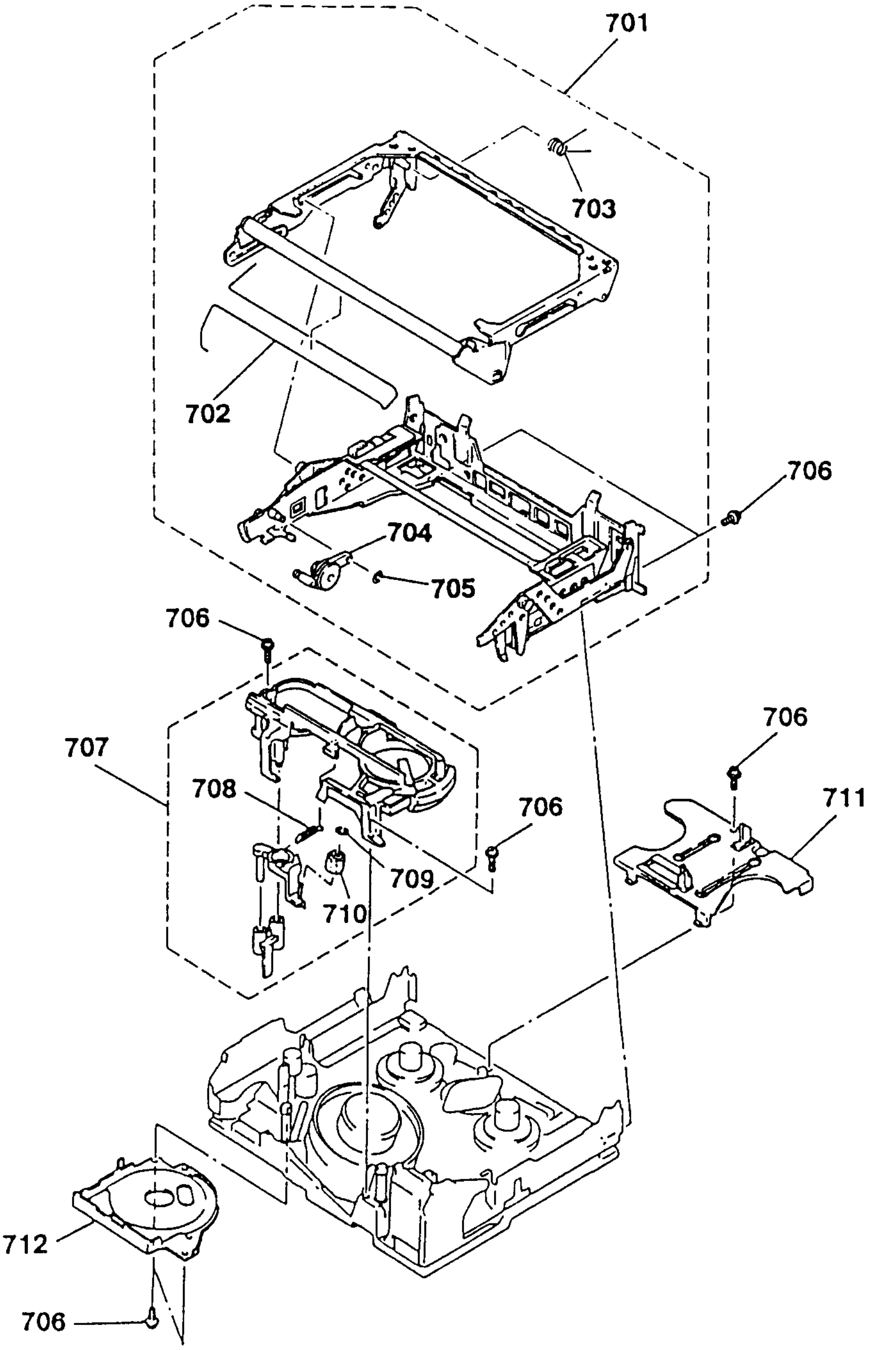

LSV-140A (TYPE Ⅰ)
Ⓑ
M905
502
Ⓐ
Ⓐ
Ⓑ
504
503
M906
504
504
501


551
VCL-5412WA (TYPE Ⅱ)
M907
555
554
M908
552
554
553
M909
554
554


VCL-5412WB (TYPE Ⅲ)
M910
602
M911
M912
601
554
604
Ⓐ
554
603
554
Ⓐ
554

Ref. No.	Part No.	Description	Remark
501	8-848-704-01	DEVICE, LENS LSV-140A (TYPE I)	
502	A-4910-598-A	DEVICE ASSY, LSV-140A (RP)	
503	A-4915-338-A	FLEXIBLE MOUNT	
504	3-713-791-41	SCREW (M1.7X5), TAPPING, P2	
M905	1-698-364-01	MOTOR ASSY, FOCUS	
M906	1-698-363-01	MOTOR ASSY, ZOOM	
551	1-547-716-11	LENS, ZOOM (VCL-5412WA)(TYPE II)	
552	3-708-891-01	TUBE, MIRROR ASSY	
553	3-708-890-01	FLEXIBLE, MAIN	
554	3-708-302-01	SCREW (BT3 P1.7X4C)	
555	3-708-886-01	COVER, IG	
M907	3-708-888-01	METER, IG (IRIS)	
M908	3-708-889-01	MOTOR ASSY, FOCUS	
M909	3-708-887-01	MOTOR ASSY, ZOOM	
601	1-547-739-11	LENS, ZOOM (VCL-5412WB)(TYPE III)	
602	3-708-900-01	TUBE, MIRROR ASSY	
603	3-708-899-01	PC BOARD ASSY, FLEXIBLE	
604	3-708-617-01	SCREW (BT3 P1.7X7C)	
M910	3-708-898-01	IRIS ASSY	
M911	3-708-897-01	MOTOR ASSY, FOCUS	
M912	3-708-896-01	MOTOR ASSY, ZOOM	

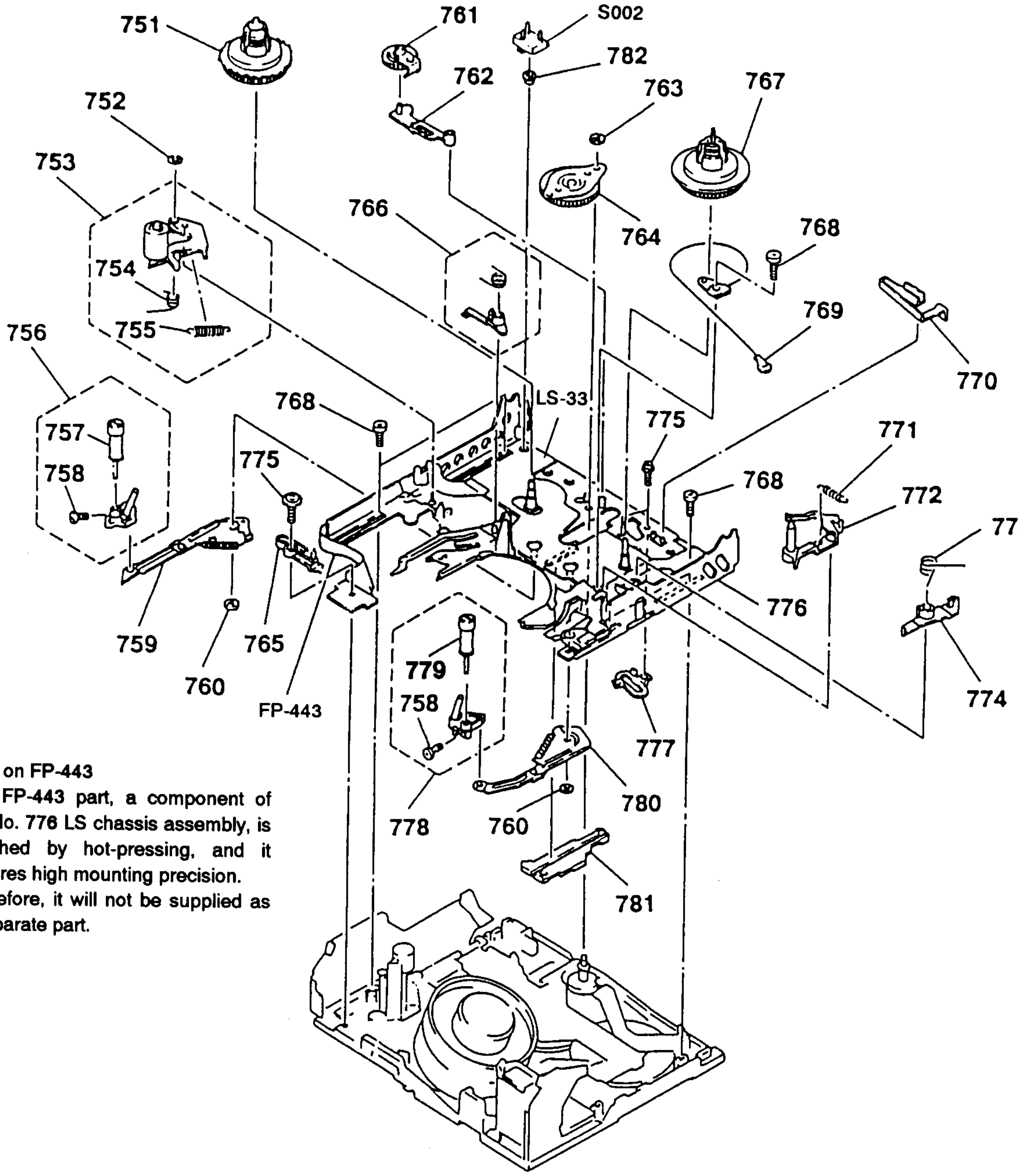
5-1-9. CASSETTE COMPARTMENT ASSEMBLY


701
703
702
706
704
705
706
706
707
708
706
711
709
710
712
706

Ref. No.	Part No.	Description	Remark
701	A-7040-312-K	CASSETTE COMPARTMENT BLOCK ASSY	
702	3-945-773-01	BAR, TORSION	
703	3-945-771-01	SPRING, TORSION	
704	X-3941-287-2	DAMPER ASSY	
705	3-315-384-31	WASHER, STOPPER	
706	3-947-503-01	SCREW (M1.4X2.5)	

Ref. No.	Part No.	Description	Remark
707	A-7040-309-A	PROTECT (BASE) BLOCK ASSY	
708	3-945-760-01	SPRING, TENSION	
709	3-321-393-01	WASHER, STOPPER	
710	X-3944-886-1	ROLLER ASSY, HC	
711	X-3941-280-1	RETAINER ASSY, GOOSENECK	
712	3-945-733-01	COVER, CAPSTAN	

5-1-10. LS CHASSIS ASSEMBLY

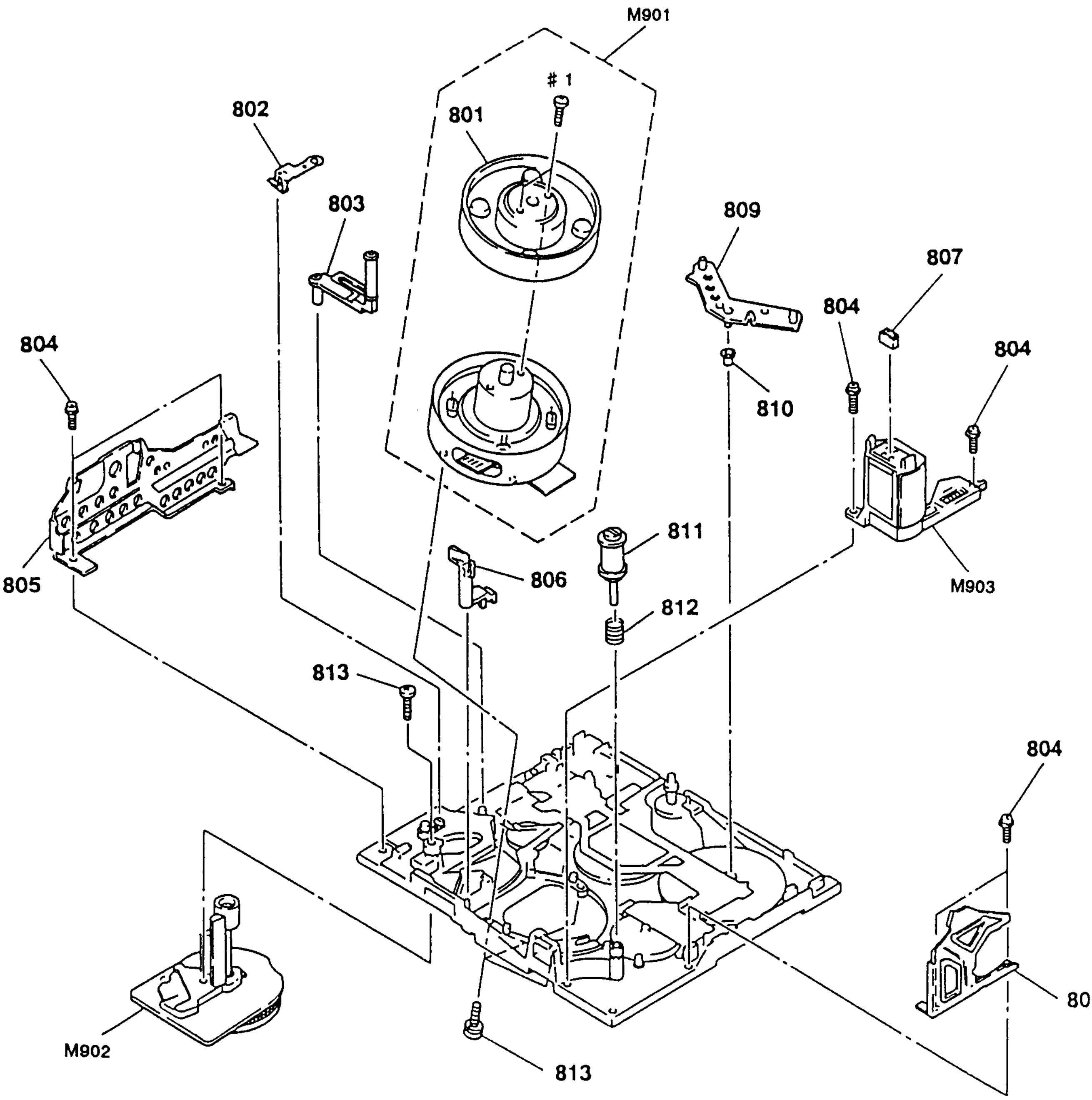

751
761
S002
782
762
763
767
752
753
766
764
768
754
769
756
755
770
768
LS-33
775
771
757
758
775
768
772
773
776
759
765
779
760
FP-443
758
774
777
780
778
760
781

Note on FP-443
The FP-443 part, a component of the No. 776 LS chassis assembly, is attached by hot-pressing, and it requires high mounting precision. Therefore, it will not be supplied as a separate part.

Ref. No.	Part No.	Description	Remark
751	X-3941-274-1	TABLE ASSY, REEL, T	
752	3-331-007-21	WASHER	
753	X-3941-271-5	ARM ASSY, PINCH	
754	3-945-743-01	SPRING, TORSION	
755	3-945-783-01	SPRING, TENSION	
756	A-7040-307-A	GUIDE (BASE)(T) BLOCK ASSY	
757	X-3941-424-1	ROLLER ASSY, TG6	
758	3-947-504-01	SCREW (M1.2X2)	
759	X-3941-267-1	ARM (T) ASSY, GUIDE	
760	3-669-465-01	WASHER (1.5), STOPPER	
761	X-3941-273-1	SOFT ASSY, T	
762	3-945-753-01	ARM, T SOFT	
763	3-726-829-01	WASHER, STOPPER	
764	X-3941-279-5	GEAR ASSY, GOOSENECK	
765	3-947-644-01	RETAINER, TG5 (BASE)	
766	A-7040-321-A	CLAW BLOCK ASSY, T HARD	
767	X-3944-116-1	TABLE ASSY, S REEL	

Ref. No.	Part No.	Description	Remark
768	3-945-756-01	SCREW (M1.4X3)	
769	X-3941-277-1	STRING BLOCK ASSY	
770	3-945-801-01	BRAKE, S SOFT	
771	3-954-327-01	SPRING, TENSION	
772	X-3941-276-1	TG1 ASSY	
773	3-945-752-01	SPRING, TORSION	
774	3-945-799-01	BRAKE, S HARD	
775	3-947-503-01	SCREW (M1.4X2.5)	
776	X-3943-307-1	CHASSIS ASSY, LS	
777	3-945-784-01	PLATE, CAM, LS	
778	A-7040-323-A	GUIDE (BASE)(S) BLOCK ASSY	
779	X-3944-648-1	ROLLER ASSY (3), TG3	
780	X-3941-266-1	ARM (S) ASSY, GUIDE	
781	3-945-837-01	SLIDER, GL	
782	3-949-881-01	SLEEVE	
S002	1-572-987-11	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, MP/MP-HG)	

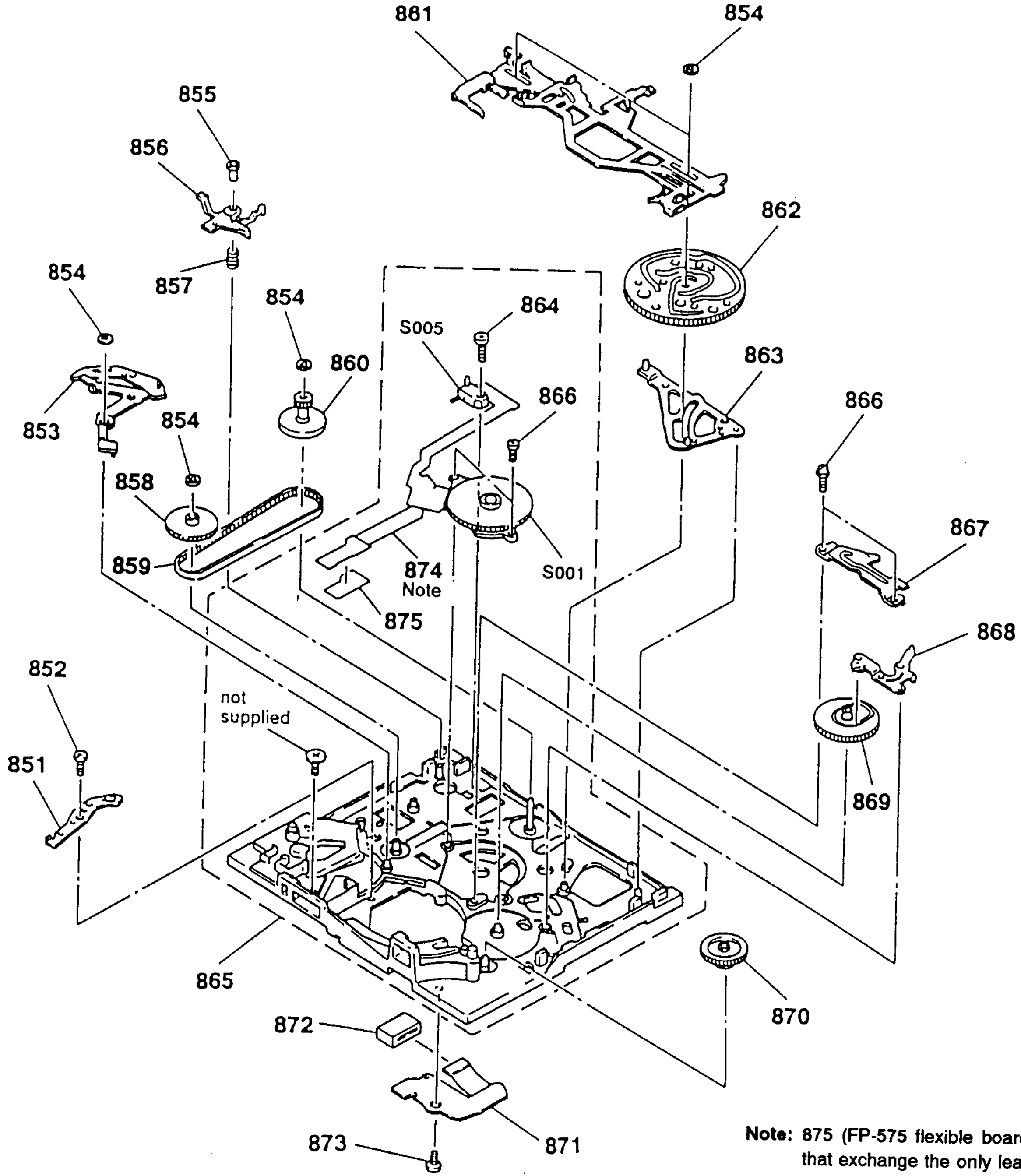
5-1-11. MECHANISM CHASSIS ASSEMBLY (1)



Ref. No.	Part No.	Description	Remark
801	A-7049-521-A	DRUM ASSY, UPPER (DGR-90-R) (TR480E/TR580E/TR670E/TR675E)	
801	A-7049-607-A	DRUM ASSY, UPPER (DGR-94-R) (TR680E/TR780E/TR880E)	
802	3-945-822-01	SPRING, LEAF, TG7 ARM	
803	A-7040-305-A	ARM BLOCK ASSY, TG7	
804	3-947-503-01	SCREW (M1.4X2.5)	
805	X-3941-255-1	PLATE (T) ASSY, SIDE	
806	3-945-735-01	ARM, HC CONVERSION	
807	1-568-323-11	CONNECTOR, BOARD TO BOARD 4P	
808	3-945-691-01	PLATE (S), SIDE	
809	3-945-701-01	ARM, LS	

Ref. No.	Part No.	Description	Remark
810	3-945-702-01	ROLLER, LS	
811	X-3942-193-1	ROLLER ASSY (2), TG2	
812	3-956-651-01	SPRING, COMPRESSION	
813	3-686-493-01	SCREW (M2X5), P1	
M901	A-7048-585-A	DRUM ASSY (DGH-90A-R) (TR480E/TR580E/TR670E/TR675E)	
M901	A-7048-808-A	DRUM ASSY (DGH-0C3A-R) (TR680E/TR780E/TR880E)	
M902	8-835-477-12	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM (LOADING)	

5-1-12. MECHANISM CHASSIS ASSEMBLY (2)


861
854
855
856
862
854
857
854
864
S005
860
863
853
854
866
866
858
867
859
874
Note
S001
875
868
852
not supplied
851
869
865
872
870
873
871

Note: 875 (FP-575 flexible board) is part that exchange the only leading part of 874 (FP-442 flexible board).

Ref. No.	Part No.	Description	Remark
851	3-945-734-01	ARM, HC DRIVING	
852	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
853	X-3941-259-1	ARM ASSY, PINCH PRESS	
854	3-726-829-01	WASHER, STOPPER	
855	3-945-730-01	SLEEVE, EJECT	
856	3-945-706-01	LEVER, EJECT	
857	3-945-729-01	SPRING, COMPRESSION	
858	X-3941-256-1	GEAR ASSY, CHANGE	
859	3-944-539-01	BELT, RELAY	
860	3-945-695-01	PULLEY, RELAY	
861	X-3941-260-1	SLIDER ASSY, M	
862	3-945-696-02	CAM	
863	X-3941-258-3	ARM ASSY, GL	
864	3-713-786-71	SCREW (M2X5)	

Ref. No.	Part No.	Description	Remark
865	A-7040-303-A	CHASSIS ASSY, MECHANICAL	
866	3-947-503-01	SCREW (M1.4X2.5)	
867	3-945-722-01	RETAINER, GEAR	
868	X-3941-257-1	ARM ASSY, FF	
869	3-945-697-01	GEAR (B), L	
870	3-945-700-01	GEAR (A), L	
871	1-641-643-12	FP-444 FLEXIBLE BOARD	
872	1-691-254-13	CONNECTOR, TRANSLATION 10P	
873	3-945-756-01	SCREW (M1.4X3)	
874	1-641-639-13	FP-442 FLEXIBLE BOARD	
875	1-645-271-11	FP-575 FLEXIBLE BOARD	
S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
S005	1-570-771-21	SWITCH (C DOWN)	

5-2. ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
- Australian model is abbreviated as AUS.
  Hong Kong model is abbreviated as HK.
  Chinese model is abbreviated as CH.
  Tourist model is abbreviated as JE.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

Ref. No.	Part No.	Description			Remark
*	A-7066-392-A	AU-184P BOARD, COMPLETE			
		***********************			
		< CAPACITOR >			
C1301	1-124-779-00	ELECT CHIP	10uF	20%	16V
C1302	1-124-779-00	ELECT CHIP	10uF	20%	16V
C1305	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C1308	1-126-607-11	ELECT CHIP	47uF	20%	4V
C1309	1-126-607-11	ELECT CHIP	47uF	20%	4V
C1312	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1313	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1314	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1315	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C1316	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C1317	1-126-607-11	ELECT CHIP	47uF	20%	4V
C1318	1-126-207-11	ELECT CHIP	33uF	20%	4V
C1319	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C1320	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C1321	1-126-209-11	ELECT	100uF	20%	4V
C1322	1-124-779-00	ELECT CHIP	10uF	20%	16V
C1323	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C1324	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1326	1-165-320-11	CERAMIC CHIP	0.47uF	10%	16V
C1327	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1328	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C1329	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1330	1-126-607-11	ELECT CHIP	47uF	20%	4V
C1331	1-165-320-11	CERAMIC CHIP	0.47uF	10%	16V
C1332	1-126-601-11	ELECT CHIP	2.2uF	20%	50V
C1333	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1334	1-126-607-11	ELECT CHIP	47uF	20%	4V
C1335	1-165-320-11	CERAMIC CHIP	0.47uF	10%	16V
C1336	1-126-601-11	ELECT CHIP	2.2uF	20%	50V
C1337	1-126-601-11	ELECT CHIP	2.2uF	20%	50V
C1338	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1339	1-165-320-11	CERAMIC CHIP	0.47uF	10%	16V
C1340	1-126-601-11	ELECT CHIP	2.2uF	20%	50V
C1341	1-126-602-11	ELECT CHIP	3.3uF	20%	50V
C1342	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C1343	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C1344	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1345	1-126-602-11	ELECT CHIP	3.3uF	20%	50V
C1346	1-163-209-00	CERAMIC CHIP	0.0015uF	10%	50V
C1348	1-124-779-00	ELECT CHIP	10uF	20%	16V
C1350	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C1351	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C1352	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1358	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C1379	1-126-607-11	ELECT CHIP	47uF	20%	4V
		< CONNECTOR >			
CN1301	1-691-490-21	CONNECTOR, FFC/FPC 11P			
* CN1302	1-691-933-11	CONNECTOR, BOARD TO BOARD 34P			
		< DIODE >			
D1303	8-719-404-49	DIODE	MA111		
D1306	8-719-052-33	DIODE	MAZV082DFL		
D1307	8-719-052-33	DIODE	MAZV082DFL		
		< IC >			
IC130	8-759-330-00	IC	AN3988NFHP-EB		
		< TRANSISTOR >			
Q1301	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q1302	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q1303	8-729-402-42	TRANSISTOR	UN5213		
Q1304	8-729-403-35	TRANSISTOR	UN5113		
Q1305	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q1306	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q1307	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q1308	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q1309	8-729-420-53	TRANSISTOR	UN5115		
Q1313	8-729-420-53	TRANSISTOR	UN5115		
Q1314	8-729-015-76	TRANSISTOR	UN5211-TX		
		< RESISTOR >			
R1301	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1302	1-216-817-11	METAL CHIP	470	5%	1/16W
R1303	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1304	1-216-817-11	METAL CHIP	470	5%	1/16W
R1307	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1308	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1309	1-216-829-11	METAL CHIP	4.7K	5%	1/16W

Ref. No.	Part No.	Description				Remark
R1310	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R1313	1-216-810-11	METAL CHIP	120	5%	1/16W	
R1314	1-216-810-11	METAL CHIP	120	5%	1/16W	
R1315	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1316	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R1317	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R1318	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R1319	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R1320	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R1321	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R1322	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R1323	1-216-813-11	METAL CHIP	220	5%	1/16W	
R1324	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R1325	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R1326	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R1328	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R1329	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R1332	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1333	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1334	1-218-875-11	METAL CHIP	15K	0.50%	1/16W	
R1336	1-218-903-11	METAL CHIP	220K	0.50%	1/16W	
R1341	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1344	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R1346	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R1347	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R1348	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R1349	1-216-817-11	METAL CHIP	470	5%	1/16W	
R1350	1-216-817-11	METAL CHIP	470	5%	1/16W	
R1351	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R1352	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1355	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1358	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1361	1-216-295-91	CONDUCTOR, CHIP (2012)				

****

* A-7072-134-A CD-137 A BOARD, COMPLETE
(TR580E/TR670E/TR675E/TR680E/TR780E/TR880E)

****

* A-7072-135-A CD-137 B BOARD, COMPLETE (TR480E)

****

(Ref. No. 3,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description				Remark
C691	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V	
C692	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V	
C693	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V	(TR480E)
C694	1-164-346-11	CERAMIC CHIP	1uF		16V	
C695	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C696	1-104-908-11	TANTAL. CHIP	47uF	20%	4V	

< IC >

Ref. No.	Part No.	Description	Remark
IC691	A-7030-369-A	CCD BLOCK ASSY (055 SERVICE)(CCD IMAGER)	(TR480E)
IC691	A-7030-371-A	CCD BLOCK ASSY (059 SERVICE)(CCD IMAGER)	(TR680E)
IC691	A-7030-495-A	CCD BLOCK ASSY (060 SERVICE)(CCD IMAGER)	(TR580E/TR670E/TR675E/TR780E/TR880E)

< COIL >

Ref. No.	Part No.	Description		Remark
L691	1-412-963-11	INDUCTOR	100uH	

< TRANSISTOR >

Ref. No.	Part No.	Description		Remark
Q691	8-729-232-86	TRANSISTOR	2SK1875-BL/V	
Q692	8-729-117-73	TRANSISTOR	2SC4178-F14	

< RESISTOR >

Ref. No.	Part No.	Description				Remark
R692	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R693	1-216-839-11	METAL CHIP	33K	5%	1/16W	(TR480E)
R693	1-216-840-11	METAL CHIP	39K	5%	1/16W	(TR580E/TR670E/TR675E/TR680E/TR780E/TR880E)
R694	1-216-045-00	METAL CHIP	680	5%	1/10W	(TR480E)
R694	1-216-047-00	METAL CHIP	820	5%	1/10W	(TR580E/TR670E/TR675E/TR680E/TR780E/TR880E)
R695	1-216-845-11	METAL CHIP	100K	5%	1/16W	(TR580E/TR670E/TR675E/TR680E/TR780E/TR880E)
R695	1-216-849-11	METAL CHIP	220K	5%	1/16W	(TR480E)
R696	1-216-809-11	METAL CHIP	100	5%	1/16W	
R697	1-216-073-00	METAL CHIP	10K	5%	1/10W	

< FLEXIBLE BOARD >

Ref. No.	Part No.	Description	Remark
W691	1-654-849-11	FP-275 FLEXIBLE BOARD	
W692	1-654-849-11	FP-275 FLEXIBLE BOARD	

****

* A-7066-394-A DD-78P BOARD, COMPLETE
(TR480E/TR580E/TR680E/TR780E)

****

* A-7066-478-A DD-78P BOARD, COMPLETE
(TR670E/TR675E/TR880E)

****

< CAPACITOR >

Ref. No.	Part No.	Description				Remark
C901	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V	
C902	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C903	1-163-121-00	CERAMIC CHIP	150PF	5%	50V	
C904	1-163-121-00	CERAMIC CHIP	150PF	5%	50V	
C906	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V	
C907	1-162-963-11	CERAMIC CHIP	680PF	10%	50V	
C908	1-162-963-11	CERAMIC CHIP	680PF	10%	50V	
C909	1-162-963-11	CERAMIC CHIP	680PF	10%	50V	

Be sure to read "Note on the CCD Imager replacement" on page 4–6 when changing the CCD imager.

Ref. No.	Part No.	Description				Remark
C910	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C911	1-162-963-11	CERAMIC CHIP	680PF	10%	50V	
C912	1-128-530-11	ELECT CHIP	33uF	20%	10V	
C913	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C914	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C915	1-165-178-11	CERAMIC CHIP	6.8uF		16V	
C916	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C917	1-165-178-11	CERAMIC CHIP	6.8uF		16V	
C918	1-165-178-11	CERAMIC CHIP	6.8uF		16V	
C920	1-165-178-11	CERAMIC CHIP	6.8uF		16V	
C921	1-165-178-11	CERAMIC CHIP	6.8uF		16V	
C923	1-165-178-11	CERAMIC CHIP	6.8uF		16V	
C924	1-165-178-11	CERAMIC CHIP	6.8uF		16V	
C925	1-164-506-11	CERAMIC CHIP	4.7uF		16V	
C926	1-164-337-11	CERAMIC CHIP	2.2uF		16V	
C927	1-165-178-11	CERAMIC CHIP	6.8uF		16V	
C928	1-165-178-11	CERAMIC CHIP	6.8uF		16V	
C929	1-135-216-11	TANTALUM CHIP	10uF	20%	10V	
C930	1-107-418-11	ELECT CHIP	10uF	20%	35V	
C931	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C932	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C934	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C935	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C936	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C937	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C938	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C939	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V	
C940	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V	
C941	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V	
C942	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C943	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V	
C944	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V	
C945	1-128-530-11	ELECT CHIP	33uF	20%	10V	
C950	1-128-004-11	ELECT CHIP	10uF	20%	16V	
		< CONNECTOR >				
CN901	1-695-324-11	CONNECTOR, BOARD TO BOARD 42P				
		< DIODE >				
D901	8-719-027-77	DIODE MA796-TX				
D909	8-719-404-49	DIODE MA111				
D910	8-719-404-49	DIODE MA111				
		< IC >				
IC901	8-759-295-31	IC MB3799-03PFV-G-BND-ER				
		< JACK >				
J901	1-537-281-41	TERMINAL BOARD (BATTERY TERMINAL)				
J902	1-565-276-21	JACK, ULTRA SMALL 1P (LANC)				

Ref. No.	Part No.	Description				Remark
J903	1-569-809-11	JACK (SMALL TYPE)(PHONES)				
		< COIL >				
L901	1-424-653-11	COIL, CHOKE 10uH				
L902	1-424-653-11	COIL, CHOKE 10uH				
L903	1-424-653-11	COIL, CHOKE 10uH				
L904	1-409-556-11	COIL, CHOKE 47uH				
L905	1-424-674-11	COIL, CHOKE 22uH				
L906	1-409-556-11	COIL, CHOKE 47uH				
L907	1-424-674-11	COIL, CHOKE 22uH				
L908	1-424-674-11	COIL, CHOKE 22uH				
L909	1-412-056-11	INDUCTOR CHIP 4.7uH				
L910	1-412-056-11	INDUCTOR CHIP 4.7uH				
L911	1-412-056-11	INDUCTOR CHIP 4.7uH				
L912	1-412-056-11	INDUCTOR CHIP 4.7uH				
L913	1-412-056-11	INDUCTOR CHIP 4.7uH				
L914	1-412-064-11	INDUCTOR CHIP 100uH				
L915	1-412-064-11	INDUCTOR CHIP 100uH				
L916	1-412-056-11	INDUCTOR CHIP 4.7uH				
L917	1-412-056-11	INDUCTOR CHIP 4.7uH				
		< IC LINK >				
⚠PS450	1-533-284-11	LINK, CHIP IC				
⚠PS451	1-533-284-11	LINK, CHIP IC				
⚠PS452	1-533-284-11	LINK, CHIP IC				
		< TRANSISTOR >				
Q900	8-729-422-14	TRANSISTOR	XN4111			(TR670E/TR675E/TR880E)
Q901	8-729-420-12	TRANSISTOR	XN4213			
Q902	8-729-804-41	TRANSISTOR	2SB1122-S			
Q903	8-729-823-82	TRANSISTOR	FP101			
Q904	8-729-823-84	TRANSISTOR	FP102			
Q905	8-729-823-82	TRANSISTOR	FP101			
Q906	8-729-823-82	TRANSISTOR	FP101			
Q907	8-729-823-82	TRANSISTOR	FP101			
Q908	8-729-420-12	TRANSISTOR	XN4213			(TR670E/TR675E/TR880E)
Q909	8-729-805-25	TRANSISTOR	2SB1121			
Q910	8-729-429-32	TRANSISTOR	UN9210-QRS			(TR670E/TR675E/TR880E)
Q914	8-729-402-42	TRANSISTOR	UN5213			
Q915	8-729-402-42	TRANSISTOR	UN5213			
		< RESISTOR >				
R901	1-218-872-11	METAL CHIP	11K	0.50%	1/16W	
R902	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R903	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R904	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R905	1-216-836-11	METAL CHIP	18K	5%	1/16W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
R906	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R907	1-216-035-00	METAL CHIP 270 5% 1/10W	
R908	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R909	1-216-031-00	METAL CHIP 180 5% 1/10W	
R910	1-216-029-00	METAL CHIP 150 5% 1/10W	
R911	1-216-029-00	METAL CHIP 150 5% 1/10W	
R912	1-216-029-00	METAL CHIP 150 5% 1/10W	
R913	1-216-041-00	METAL CHIP 470 5% 1/10W	
R915	1-216-864-11	METAL CHIP 0 5% 1/16W	
R918	1-216-819-11	METAL CHIP 680 5% 1/16W	
R919	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R920	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R921	1-412-052-21	INDUCTOR CHIP 1uH	
R922	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R923	1-412-052-21	INDUCTOR CHIP 1uH	
R924	1-412-979-21	INDUCTOR 1uH	
R925	1-216-864-11	METAL CHIP 0 5% 1/16W	
R927	1-216-814-11	METAL CHIP 270 5% 1/16W	(TR670E/TR675E/TR880E)
R927	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR480E/TR580E/TR680E/TR780E)
R928	1-216-852-11	METAL CHIP 390K 5% 1/16W	
R931	1-216-864-11	METAL CHIP 0 5% 1/16W	
R932	1-412-979-21	INDUCTOR 1uH	
R933	1-412-979-21	INDUCTOR 1uH	
R936	1-412-979-21	INDUCTOR 1uH	
R937	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR480E/TR580E/TR680E/TR780E)
R938	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR480E/TR580E/TR680E/TR780E)
R939	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR670E/TR675E/TR880E)
R940	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR480E/TR580E/TR680E/TR780E)
R941	1-218-849-11	METAL CHIP 1.2K 0.50% 1/16W	
R942	1-216-864-11	METAL CHIP 0 5% 1/16W	
R943	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR670E/TR675E/TR880E)
R944	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR480E/TR580E/TR680E/TR780E)
R945	1-218-847-11	METAL CHIP 1K 0.50% 1/16W	
R946	1-216-841-11	METAL CHIP 47K 5% 1/16W	(TR670E/TR675E/TR880E)
R947	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	(TR670E/TR675E/TR880E)
R948	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR670E/TR675E/TR880E)
R949	1-216-841-11	METAL CHIP 47K 5% 1/16W	(TR670E/TR675E/TR880E)

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
T901	1-426-938-11	TRANSFORMER, DC/DC CONVERTER	(TR480E/TR580E/TR680E/TR780E)
T901	1-427-676-21	TRANSFORMER, DC/DC CONVERTER	(TR670E/TR675E/TR880E)

****

Ref. No.	Part No.	Description	Remark
*	1-651-890-11	FP-49 FLEXIBLE BOARD	(TR580E/TR670E/TR675E/TR780E/TR880E)

****

(Ref. No. 3,000 Series)

< SENSOR >

Ref. No.	Part No.	Description	Remark
	1-810-725-31	SENSOR, ANGULAR VELOCITY	
	1-810-725-41	SENSOR, ANGULAR VELOCITY	

****

Ref. No.	Part No.	Description	Remark
*	A-7066-396-A	HE-19P BOARD, COMPLETE	(TR680E/TR780E/TR880E)

****

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C1103	1-162-917-11	CERAMIC CHIP 15PF 5% 50V	
C1106	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C1107	1-162-917-11	CERAMIC CHIP 15PF 5% 50V	
C1108	1-162-925-11	CERAMIC CHIP 68PF 5% 50V	
C1109	1-162-928-11	CERAMIC CHIP 120PF 5% 50V	
C1110	1-162-909-11	CERAMIC CHIP 4PF 0.25PF 50V	
C1111	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C1112	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1113	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C1114	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1115	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1116	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1117	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1118	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1119	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C1121	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1122	1-164-218-11	CERAMIC CHIP 180PF 0.25PF 50V	
C1123	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C1124	1-162-925-11	CERAMIC CHIP 68PF 5% 50V	
C1125	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1126	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	
C1127	1-162-910-11	CERAMIC CHIP 5PF 0.25PF 50V	
C1128	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1129	1-162-925-11	CERAMIC CHIP 68PF 5% 50V	
C1130	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C1131	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C1132	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1133	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	

Ref. No.	Part No.	Description			Remark
C1134	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C1135	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1136	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1137	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C1138	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1139	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C1140	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C1141	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C1142	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C1143	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C1144	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C1146	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1147	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C1148	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C1151	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C1152	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1155	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1156	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C1157	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1160	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C1161	1-164-218-11	CERAMIC CHIP	180PF	0.25PF	50V
C1162	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C1163	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C1164	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1165	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C1166	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C1167	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1168	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C1169	1-164-155-11	CERAMIC CHIP	75PF	5%	50V
C1170	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C1171	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C1173	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C1175	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C1176	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C1177	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C1178	1-164-218-11	CERAMIC CHIP	180PF	0.25PF	50V
C1179	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C1180	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C1181	1-164-362-11	CERAMIC CHIP	470PF	5%	50V
C1182	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C1183	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1184	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1185	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C1186	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C1187	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C1188	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1189	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1192	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C1196	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C1198	1-164-471-11	CERAMIC CHIP	680PF	5%	50V

Ref. No.	Part No.	Description			Remark
C1199	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
		< CONNECTOR >			
* CN1101	1-573-341-11	CONNECTOR, BOARD TO BOARD 26P			
		< DIODE >			
D1101	8-719-404-49	DIODE	MA111		
D1102	8-719-027-48	DIODE	MA142WA-(TX)		
D1103	8-719-027-48	DIODE	MA142WA-(TX)		
D1104	8-719-404-49	DIODE	MA111		
D1105	8-719-404-49	DIODE	MA111		
		< FILTER >			
FL1101	1-236-775-11	FILTER, LOW PASS (DEM)			
FL1102	1-239-112-21	FILTER, LOW PASS (Y)			
		< IC >			
IC1101	8-752-058-02	IC	CXA1509AR		
IC1102	8-759-070-51	IC	SN74HCU04ADB		
		< COIL >			
L1101	1-412-963-11	INDUCTOR	100uH		
L1102	1-412-954-11	INDUCTOR	18uH		
L1103	1-412-949-21	INDUCTOR	6.8uH		
L1104	1-412-959-11	INDUCTOR	47uH		
L1105	1-412-954-11	INDUCTOR	18uH		
L1106	1-412-945-11	INDUCTOR	3.3uH		
L1107	1-412-962-11	INDUCTOR	82uH		
L1108	1-412-954-11	INDUCTOR	18uH		
L1109	1-412-948-11	INDUCTOR	5.6uH		
L1110	1-412-951-11	INDUCTOR	10uH		
L1111	1-410-656-11	INDUCTOR CHIP	150uH		
L1112	1-412-058-11	INDUCTOR CHIP	10uH		
L1113	1-412-058-11	INDUCTOR CHIP	10uH		
L1115	1-412-954-11	INDUCTOR	18uH		
L1116	1-412-946-11	INDUCTOR	3.9uH		
L1118	1-412-953-11	INDUCTOR	15uH		
L1119	1-412-949-21	INDUCTOR	6.8uH		
L1120	1-412-949-21	INDUCTOR	6.8uH		
L1121	1-412-951-11	INDUCTOR	10uH		
L1122	1-412-953-11	INDUCTOR	15uH		
L1123	1-412-944-11	INDUCTOR	2.7uH		
L1124	1-412-959-11	INDUCTOR	47uH		
L1125	1-412-962-11	INDUCTOR	82uH		
L1126	1-412-951-11	INDUCTOR	10uH		
L1128	1-412-962-11	INDUCTOR	82uH		
		< TRANSISTOR >			
Q1102	8-729-402-42	TRANSISTOR	UN5213		
Q1103	8-729-012-50	TRANSISTOR	2SC4400-3/4/5		

Ref. No.	Part No.	Description		Remark
Q1107	8-729-402-42	TRANSISTOR	UN5213	
Q1110	8-729-120-28	TRANSISTOR	2SC1623-L5L6	
Q1111	8-729-420-24	TRANSISTOR	2SB1218A-QRS	
Q1113	8-729-012-50	TRANSISTOR	2SC4400-3/4/5	
Q1114	8-729-402-81	TRANSISTOR	XN4501	
Q1115	8-729-012-50	TRANSISTOR	2SC4400-3/4/5	
Q1117	8-729-230-63	TRANSISTOR	2SC4116-YG	
Q1118	8-729-230-63	TRANSISTOR	2SC4116-YG	
Q1119	8-729-402-42	TRANSISTOR	UN5213	
Q1120	8-729-403-35	TRANSISTOR	UN5113	
Q1121	8-729-420-24	TRANSISTOR	2SB1218A-QRS	
Q1122	8-729-230-63	TRANSISTOR	2SC4116-YG	
Q1123	8-729-012-50	TRANSISTOR	2SC4400-3/4/5	
Q1125	8-729-420-24	TRANSISTOR	2SB1218A-QRS	
Q1126	8-729-012-50	TRANSISTOR	2SC4400-3/4/5	
Q1127	8-729-403-35	TRANSISTOR	UN5113	
Q1128	8-729-230-63	TRANSISTOR	2SC4116-YG	
Q1129	8-729-012-50	TRANSISTOR	2SC4400-3/4/5	
Q1130	8-729-230-63	TRANSISTOR	2SC4116-YG	
Q1131	8-729-824-02	TRANSISTOR	2SA1838	
Q1132	8-729-012-50	TRANSISTOR	2SC4400-3/4/5	
Q1133	8-729-012-50	TRANSISTOR	2SC4400-3/4/5	
Q1134	8-729-402-42	TRANSISTOR	UN5213	
Q1135	8-729-402-42	TRANSISTOR	UN5213	
Q1136	8-729-402-42	TRANSISTOR	UN5213	
Q1137	8-729-230-63	TRANSISTOR	2SC4116-YG	
Q1138	8-729-420-24	TRANSISTOR	2SB1218A-QRS	
Q1139	8-729-402-42	TRANSISTOR	UN5213	
Q1143	8-729-403-35	TRANSISTOR	UN5113	

< RESISTOR >

Ref. No.	Part No.	Description				Remark
R1100	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R1101	1-216-814-11	METAL CHIP	270	5%	1/16W	
R1102	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1103	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1104	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R1105	1-216-817-11	METAL CHIP	470	5%	1/16W	
R1106	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R1107	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R1108	1-216-813-11	METAL CHIP	220	5%	1/16W	
R1109	1-216-813-11	METAL CHIP	220	5%	1/16W	
R1110	1-216-815-11	METAL CHIP	330	5%	1/16W	
R1111	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R1112	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R1113	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R1114	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R1115	1-216-820-11	METAL CHIP	820	5%	1/16W	
R1116	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R1118	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R1119	1-216-815-11	METAL CHIP	330	5%	1/16W	
R1120	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R1123	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R1124	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R1125	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R1127	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R1128	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R1129	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1130	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R1131	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R1132	1-216-820-11	METAL CHIP	820	5%	1/16W	
R1134	1-216-820-11	METAL CHIP	820	5%	1/16W	
R1135	1-216-814-11	METAL CHIP	270	5%	1/16W	
R1136	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R1138	1-216-816-11	METAL CHIP	390	5%	1/16W	
R1148	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R1149	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R1151	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R1152	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R1153	1-216-818-11	METAL CHIP	560	5%	1/16W	
R1154	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R1155	1-216-817-11	METAL CHIP	470	5%	1/16W	
R1156	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R1157	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R1158	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R1159	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R1160	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R1161	1-216-819-11	METAL CHIP	680	5%	1/16W	
R1162	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R1163	1-216-817-11	METAL CHIP	470	5%	1/16W	
R1164	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R1165	1-216-814-11	METAL CHIP	270	5%	1/16W	
R1166	1-216-815-11	METAL CHIP	330	5%	1/16W	
R1167	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R1168	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R1169	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R1170	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R1171	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R1172	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R1173	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R1174	1-216-813-11	METAL CHIP	220	5%	1/16W	
R1175	1-216-813-11	METAL CHIP	220	5%	1/16W	
R1176	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R1177	1-216-814-11	METAL CHIP	270	5%	1/16W	
R1178	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R1179	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R1181	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1182	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R1183	1-216-817-11	METAL CHIP	470	5%	1/16W	
R1184	1-216-819-11	METAL CHIP	680	5%	1/16W	
R1185	1-216-833-11	METAL CHIP	10K	5%	1/16W	

Ref. No.	Part No.	Description	Remark
R1186	1-216-817-11	METAL CHIP 470 5% 1/16W	
R1187	1-216-815-11	METAL CHIP 330 5% 1/16W	
R1188	1-216-820-11	METAL CHIP 820 5% 1/16W	
R1189	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1191	1-216-813-11	METAL CHIP 220 5% 1/16W	
R1194	1-216-819-11	METAL CHIP 680 5% 1/16W	
R1195	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R1196	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R1197	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R1198	1-216-819-11	METAL CHIP 680 5% 1/16W	
R1199	1-216-819-11	METAL CHIP 680 5% 1/16W	
R1201	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R1202	1-216-813-11	METAL CHIP 220 5% 1/16W	
R1203	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R1204	1-216-815-11	METAL CHIP 330 5% 1/16W	
R1205	1-216-817-11	METAL CHIP 470 5% 1/16W	
R1206	1-216-815-11	METAL CHIP 330 5% 1/16W	
R1207	1-216-815-11	METAL CHIP 330 5% 1/16W	
R1208	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R1209	1-216-817-11	METAL CHIP 470 5% 1/16W	
R1210	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R1212	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R1213	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R1214	1-216-820-11	METAL CHIP 820 5% 1/16W	
R1215	1-216-819-11	METAL CHIP 680 5% 1/16W	
R1216	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R1217	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R1218	1-216-817-11	METAL CHIP 470 5% 1/16W	
R1219	1-216-817-11	METAL CHIP 470 5% 1/16W	
R1220	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1221	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1222	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1223	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1224	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R1225	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R1229	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R1231	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1232	1-216-811-11	METAL CHIP 150 5% 1/16W	

****

* A-7072-267-A LB-38P BOARD, COMPLETE
(TR670E/TR675E/TR880E)
****

< FLUORESCENT LANP >

Ref. No.	Part No.	Description	Remark
BL801	1-517-325-11	LANP, FLUORESCENT (0.55 INCH)	

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C801	1-104-917-11	TANTAL. CHIP 15uF 20% 20V	
C802	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C803	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C804	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	
C805	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	
C806	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
* CN801	1-573-333-21	CONNECTOR, BOARD TO BOARD 10P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D801	8-719-033-14	DIODE CL-170PG-CD-T	
D802	8-719-802-36	DIODE 1SS250	

< COIL >

Ref. No.	Part No.	Description	Remark
L801	1-412-033-11	INDUCTOR CHIP 220uH	
L802	1-412-029-11	INDUCTOR CHIP 10uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q801	8-729-024-60	TRANSISTOR MTD6N15T4	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R801	1-216-804-11	METAL CHIP 39 5% 1/16W	
R802	1-216-840-11	METAL CHIP 39K 5% 1/16W	

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
T801	1-426-849-31	TRANSFORMER, INVERTER	

****

* LS-33 BOARD, COMPLETE
****
(Ref. No. 3,000 Series)

< DIODE >

Ref. No.	Part No.	Description	Remark
D001	8-719-989-52	DIODE GL4600S	

< HALL ELEMENT >

Ref. No.	Part No.	Description	Remark
H001	8-719-987-62	DIODE LT140SAZ	
H002	8-719-987-62	DIODE LT140SAZ	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q001	8-729-012-46	TRANSISTOR PT4600FS	
Q002	8-729-012-46	TRANSISTOR PT4600FS	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R003	1-216-033-00	METAL CHIP 220 5% 1/10W	
R004	1-216-033-00	METAL CHIP 220 5% 1/10W	
R010	1-216-033-00	METAL CHIP 220 5% 1/10W	
R011	1-216-033-00	METAL CHIP 220 5% 1/10W	

Ref. No.	Part No.	Description	Remark
		< SWITCH >	
S002	1-572-987-11	SWITCH, PUSH (3 KEY)	

****

*	A-7066-398-A	MA-233P BOARD, COMPLETE ***********************	
		< CAPACITOR >	
C001	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C002	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C004	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	
C005	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C006	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C007	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C008	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C009	1-163-024-00	CERAMIC CHIP 0.018uF 10% 50V	
C010	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C011	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C012	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C013	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C014	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C016	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C017	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C018	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C019	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C020	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C021	1-163-024-00	CERAMIC CHIP 0.018uF 10% 50V	
C022	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C023	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C024	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C025	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	
C026	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C028	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C029	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
		< CONNECTOR >	
* CN001	1-580-055-21	PIN, CONNECTOR 2P	
CN002	1-691-490-21	CONNECTOR, FFC/FPC 11P	
* CN003	1-580-055-21	PIN, CONNECTOR 2P	
		< DIODE >	
D001	8-719-404-19	DIODE LN1251C	
D002	8-719-404-49	DIODE MA111	
D003	8-719-404-49	DIODE MA111	
		< IC >	
IC001	8-759-161-31	IC LA7471M-TE-B	
IC002	8-749-923-29	IC RS-20E-T	

Ref. No.	Part No.	Description	Remark
		< JACK >	
J001	1-691-737-11	JACK (SMALL TYPE)(EXT MIC)	
		< COIL >	
L001	1-412-939-11	INDUCTOR 1uH	
L002	1-412-939-11	INDUCTOR 1uH	
L003	1-412-939-11	INDUCTOR 1uH	
		< RESISTOR >	
R001	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R002	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R003	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R004	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R005	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R006	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R007	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R008	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R009	1-216-813-11	METAL CHIP 220 5% 1/16W	
R010	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R011	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R012	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R014	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R016	1-216-815-11	METAL CHIP 330 5% 1/16W	
R017	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R018	1-216-817-11	METAL CHIP 470 5% 1/16W	
R019	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R020	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R021	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R022	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R023	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R024	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R025	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R026	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R036	1-216-864-11	METAL CHIP 0 5% 1/16W	
R037	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R038	1-216-838-11	METAL CHIP 27K 5% 1/16W	

****

*	A-7066-397-A	PJ-68P BOARD, COMPLETE (TR670E/TR675E/TR680E/TR780E/TR880E) **	
*	A-7066-417-A	PJ-68P BOARD, COMPLETE (TR480E/TR580E) **************************************	
		< CAPACITOR >	
C1506	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1507	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C1508	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C1509	1-164-383-11	CERAMIC CHIP 110PF 5% 50V	

Ref. No.	Part No.	Description			Remark
C1510	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1511	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C1512	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1514	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C1515	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C1516	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C1517	1-162-974-11	CERAMIC CHIP	0.01uF		50V
					(TR480E/TR580E)
C1518	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C1521	1-164-218-11	CERAMIC CHIP	180PF	0.25PF	50V
		< CONNECTOR >			
* CN1502	1-573-334-11	CONNECTOR, BOARD TO BOARD 12P			
		< IC >			
IC1501	8-759-334-09	IC CXA2003N-T4			
		< COIL >			
L1504	1-414-078-11	INDUCTOR 10uH			
		< TRANSISTOR >			
Q1506	8-729-402-42	TRANSISTOR UN5213			
		< RESISTOR >			
R1505	1-216-864-11	METAL CHIP	0	5%	1/16W
R1507	1-216-864-11	METAL CHIP	0	5%	1/16W
R1512	1-218-871-11	METAL CHIP	10K	0.50%	1/16W
R1513	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1514	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R1515	1-216-864-11	METAL CHIP	0	5%	1/16W
R1516	1-216-864-11	METAL CHIP	0	5%	1/16W
R1517	1-216-864-11	METAL CHIP	0	5%	1/16W
R1519	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R1520	1-216-864-11	METAL CHIP	0	5%	1/16W
R1521	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R1524	1-216-864-11	METAL CHIP	0	5%	1/16W
R1525	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R1536	1-216-864-11	METAL CHIP	0	5%	1/16W
		(TR670E/TR675E/TR680E/TR780E/TR880E)			
R1549	1-216-864-11	METAL CHIP	0	5%	1/16W
R1550	1-216-832-11	METAL CHIP	8.2K	5%	1/16W

****

Ref. No.	Part No.	Description			Remark
*	A-7072-283-A	SL-38 BOARD, COMPLETE			
		*********************			
					(Ref. No. 4,000 Series)
		< CAPACITOR >			
C543	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C544	1-135-211-11	TANTAL. CHIP	6.8uF	20%	6.3V
C545	1-135-211-11	TANTAL. CHIP	6.8uF	20%	6.3V
C546	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C547	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C551	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C553	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C554	1-135-215-21	TANTAL. CHIP	6.8uF	20%	16V
C555	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C556	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C557	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C558	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
		< CONNECTOR >			
CN500	1-691-473-21	CONNECTOR, FFC/FPC 7P			
CN500	1-691-481-11	CONNECTOR, FFC/FPC 7P			
CN501	1-691-472-21	CONNECTOR, FFC/FPC 6P			
CN501	1-691-480-11	CONNECTOR, FFC/FPC 6P			
CN502	1-691-482-21	CONNECTOR, FFC/FPC 15P			
		< IC >			
IC507	8-759-165-47	IC MPC1780VFUEB			
		< COIL >			
L505	1-414-078-11	INDUCTOR 10uH			
		< TRANSISTOR >			
Q560	8-729-805-25	TRANSISTOR 2SB1121			
Q561	8-729-425-50	TRANSISTOR 2SB1462Q			
Q562	8-729-402-81	TRANSISTOR XN4501			
		< RESISTOR >			
R562	1-218-879-11	METAL CHIP	22K	0.50%	1/16W
R563	1-218-879-11	METAL CHIP	22K	0.50%	1/16W
R564	1-216-864-11	METAL CHIP	0	5%	1/16W
R565	1-216-833-11	METAL CHIP	10K	5%	1/16W
R566	1-218-857-11	METAL CHIP	2.7K	0.50%	1/16W
R567	1-216-295-91	CONDUCTOR, CHIP (2012)			
R568	1-216-168-00	METAL GLAZE	56	5%	1/8W
R569	1-218-879-11	METAL CHIP	22K	0.50%	1/16W
R570	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R571	1-218-879-11	METAL CHIP	22K	0.50%	1/16W
R572	1-216-841-11	METAL CHIP	47K	5%	1/16W
R573	1-216-857-11	METAL CHIP	1M	5%	1/16W
R590	1-216-833-11	METAL CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description	Remark
R591	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	

< FLEXIBLE BOARD >

Ref. No.	Part No.	Description	Remark
W500	1-651-889-11	FP-48 FLEXIBLE BOARD	
W501	1-642-186-11	FP-437 FLEXIBLE BOARD	

****

* A-7066-395-A VC-161P BOARD, COMPLETE (TR780E)

****

* A-7066-412-A VC-161P BOARD, COMPLETE (TR480E)

****

* A-7066-416-A VC-161P BOARD, COMPLETE (TR580E:AEP, UK)

****

* A-7066-481-A VC-161P BOARD, COMPLETE (TR680E)

****

* A-7085-035-A VC-161P BOARD, COMPLETE (TR670E/TR880E)

****

* A-7085-037-A VC-161P BOARD, COMPLETE(TR580E:E, HK, AUS)

****

* A-7085-039-A VC-161P BOARD, COMPLETE (TR675E)

****

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C604	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C605	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C606	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C607	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C608	1-104-847-11	TANTAL. CHIP 22uF 20% 4V	(TR480E/TR580E)
C609	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C610	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C611	1-164-360-11	CERAMIC CHIP 0.1uF 16V	(TR480E/TR580E)
C612	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C613	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR480E/TR580E)
C614	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR480E/TR580E)
C616	1-135-091-91	TANTAL. CHIP 1uF 20% 16V	
C617	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C618	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C619	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C620	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C621	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C622	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C623	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C624	1-162-974-11	CERAMIC CHIP 0.01uF 50V	

Ref. No.	Part No.	Description	Remark
C628	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C629	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C630	1-162-920-11	CERAMIC CHIP 27PF 5% 50V	
C631	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C632	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C633	1-162-920-11	CERAMIC CHIP 27PF 5% 50V	(TR580E/TR670E/TR675E/TR680E/TR780E/TR880E)
C633	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	(TR480E)
C634	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C635	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C636	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C637	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C638	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C639	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C641	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	
C642	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	
C644	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C645	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C646	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C647	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C691	1-164-492-11	CERAMIC CHIP 0.15uF 10% 16V	
C701	1-163-059-91	CERAMIC CHIP 0.01uF 10% 50V	
C702	1-162-638-11	CERAMIC CHIP 1uF 16V	
C703	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C704	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C705	1-135-145-11	TANTALUM CHIP 0.47uF 10% 35V	
C706	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C708	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C709	1-135-214-21	TANTAL. CHIP 4.7uF 20% 20V	
C710	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C711	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C712	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C713	1-104-752-11	TANTAL. CHIP 33uF 20% 6.3V	
C714	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C715	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C716	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C717	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C718	1-162-637-11	CERAMIC CHIP 0.47uF 16V	
C719	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C720	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C721	1-162-916-11	CERAMIC CHIP 12PF 5% 50V	
C722	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C724	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	(TR580E/TR670E/TR675E/TR680E/TR780E/TR880E)
C724	1-162-925-11	CERAMIC CHIP 68PF 5% 50V	(TR480E)
C725	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C726	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C727	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C728	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C729	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C730	1-164-492-11	CERAMIC CHIP 0.15uF 10% 16V	

Ref. No.	Part No.	Description	Remark
C731	1-135-145-11	TANTALUM CHIP 0.47uF 10% 35V	
C732	1-162-638-11	CERAMIC CHIP 1uF 16V	
C733	1-162-638-11	CERAMIC CHIP 1uF 16V	
C734	1-135-145-11	TANTALUM CHIP 0.47uF 10% 35V	
C735	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C741	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C742	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C743	1-163-059-91	CERAMIC CHIP 0.01uF 10% 50V	
C744	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C745	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C746	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C747	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C748	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C749	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C750	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C751	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C752	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C753	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C754	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C755	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C756	1-104-752-11	TANTAL. CHIP 33uF 20% 6.3V	
C757	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C771	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	(TR580E/TR670E/TR675E/TR780E/TR880E)
C772	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	(TR580E/TR670E/TR675E/TR780E/TR880E)
C773	1-164-299-11	CERAMIC CHIP 0.22uF 10% 25V	(TR580E/TR670E/TR675E/TR780E/TR880E)
C774	1-128-257-21	ELECT CHIP 33uF 20% 10V	(TR580E/TR670E/TR675E/TR780E/TR880E)
C775	1-128-257-21	ELECT CHIP 33uF 20% 10V	(TR580E/TR670E/TR675E/TR780E/TR880E)
C776	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	(TR580E/TR670E/TR675E/TR780E/TR880E)
C777	1-162-568-11	CERAMIC CHIP 0.33uF 10% 16V	(TR580E/TR670E/TR675E/TR780E/TR880E)
C778	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	(TR580E/TR670E/TR675E/TR780E/TR880E)
C779	1-162-568-11	CERAMIC CHIP 0.33uF 10% 16V	(TR580E/TR670E/TR675E/TR780E/TR880E)
C780	1-164-360-11	CERAMIC CHIP 0.1uF 16V	(TR580E/TR670E/TR675E/TR780E/TR880E)
C781	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR580E/TR670E/TR675E/TR780E/TR880E)
C782	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TR580E/TR670E/TR675E/TR780E/TR880E)
C783	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TR580E/TR670E/TR675E/TR780E/TR880E)
C784	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR580E/TR670E/TR675E/TR780E/TR880E)
C785	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C786	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C788	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	(TR580E/TR670E/TR675E/TR780E/TR880E)
C789	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	(TR580E/TR670E/TR675E/TR780E/TR880E)
C790	1-164-299-11	CERAMIC CHIP 0.22uF 10% 25V	(TR580E/TR670E/TR675E/TR780E/TR880E)
C793	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TR580E/TR670E/TR675E/TR780E/TR880E)
C794	1-164-360-11	CERAMIC CHIP 0.1uF 16V	(TR580E/TR670E/TR675E/TR780E/TR880E)
		< CONNECTOR >	
* CN601	1-764-395-21	CONNECTOR, BOARD TO BOARD 42P	
CN701	1-750-630-11	CONNECTOR, FFC/FPC (ZIF) 16P	
CN751	1-764-528-11	CONNECTOR, FFC/FPC (ZIF) 21P	
CN775	1-691-487-21	CONNECTOR, FFC/FPC 8P	(TR580E/TR670E/TR675E/TR780E/TR880E)
		< TRIMMER >	
CT701	1-141-356-11	CAP, ADJ	
CT701	1-141-430-51	CAP, CHIP TRIMMER	
		< DIODE >	
D601	8-719-404-46	DIODE MA110	
D601	8-719-404-49	DIODE MA111	
D701	8-719-404-46	DIODE MA110	
D701	8-719-404-49	DIODE MA111	
D702	8-719-404-46	DIODE MA110	
D702	8-719-404-49	DIODE MA111	
D703	8-719-404-46	DIODE MA110	
D703	8-719-404-49	DIODE MA111	
D705	8-719-404-46	DIODE MA110	
D705	8-719-404-49	DIODE MA111	
		< FILTER >	
FL601	1-239-352-11	FILTER, LOW PASS	(TR580E/TR670E/TR675E/TR680E/TR780E/TR880E)
FL601	1-239-766-11	FILTER, LOW PASS (TR480E)	
		< IC >	
IC601	8-759-276-29	IC XL9020F-E2	(TR670E/TR675E/TR780E/TR880E)
IC601	8-759-278-57	IC AK6420HF-E2 (TR480E/TR580E/TR680E)	
IC602	8-759-344-95	IC SC424618-MC68HC11MA8FU	
IC603	8-759-635-27	IC M62352GP	
IC604	8-759-710-29	IC NJM2235M (TR480E/TR580E)	
IC609	8-752-375-10	IC CXD2150BR-T6	
IC610	8-752-365-72	IC CXD2151R-T6	
IC611	8-759-262-36	IC CXD2133BR-T6	
IC613	8-759-297-76	IC CXD2152AREL	
IC614	8-759-328-91	IC uPD6461GS-811-GLG-E2	

VC-161

Ref.No.	Part No.	Description	Remark
IC701	8-752-355-07	IC CXD1267N-T4	
IC702	8-752-374-25	IC CXD2415R-T4	
IC703	8-752-073-11	IC CXA2006Q-T4	
IC704	8-759-335-30	IC HD49315AFEB	
IC705	8-752-373-69	IC CXD2407BR-T4	
IC751	8-759-701-24	IC NJM3414M	
IC752	8-759-058-50	IC BA10324AF-E2	
IC752	8-759-100-95	IC uPC324G2	
IC753	8-752-365-65	IC CXD2126N-T4	
IC754	8-759-247-07	IC MPC17A34VMEL	
IC755	8-759-209-15	IC TC4SU69F	
IC772	8-759-234-77	IC TC4S66F	(TR580E/TR670E/TR675E/TR780E/TR880E)
IC773	8-759-234-77	IC TC4S66F	(TR580E/TR670E/TR675E/TR780E/TR880E)
IC774	8-759-058-45	IC NJM3403AV(TE2)	(TR580E/TR670E/TR675E/TR780E/TR880E)
IC775	8-759-080-34	IC TA75W01FU-TE12R	(TR580E/TR670E/TR675E/TR780E/TR880E)
IC776	8-759-248-78	IC MB88102PFV-G-BND-ER	(TR580E/TR670E/TR675E/TR780E/TR880E)
IC778	8-752-865-22	IC CXP81120-003R	

< COIL >

Ref.No.	Part No.	Description	Remark
L601	1-412-058-11	INDUCTOR CHIP 10uH	
L602	1-414-078-11	INDUCTOR 10uH	
L603	1-412-058-11	INDUCTOR CHIP 10uH	
L604	1-414-078-11	INDUCTOR 10uH	
L605	1-410-389-31	INDUCTOR CHIP 47uH	
L606	1-414-078-11	INDUCTOR 10uH	
L607	1-414-078-11	INDUCTOR 10uH	
L608	1-412-006-31	INDUCTOR CHIP 10uH	
L609	1-412-979-21	INDUCTOR 1uH	
L610	1-412-979-21	INDUCTOR 1uH	
L611	1-414-230-11	INDUCTOR, FERRITE BEAD	
L612	1-414-230-11	INDUCTOR, FERRITE BEAD	
L614	1-414-230-11	INDUCTOR, FERRITE BEAD	
L702	1-412-058-11	INDUCTOR CHIP 10uH	
L703	1-412-058-11	INDUCTOR CHIP 10uH	
L704	1-412-058-11	INDUCTOR CHIP 10uH	
L705	1-412-058-11	INDUCTOR CHIP 10uH	
L706	1-412-058-11	INDUCTOR CHIP 10uH	
L751	1-412-062-11	INDUCTOR CHIP 47uH	
L752	1-412-058-11	INDUCTOR CHIP 10uH	
L753	1-412-058-11	INDUCTOR CHIP 10uH	
L775	1-412-058-11	INDUCTOR CHIP 10uH	(TR580E/TR670E/TR675E/TR780E/TR880E)
L777	1-414-078-11	INDUCTOR 10uH	(TR580E/TR670E/TR675E/TR780E/TR880E)
L778	1-414-078-11	INDUCTOR 10uH	

< TRANSISTOR >

Ref.No.	Part No.	Description	Remark
Q604	8-729-030-54	TRANSISTOR MSB1218A-RT1	
Q604	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q604	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q605	8-729-030-54	TRANSISTOR MSB1218A-RT1	
Q605	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q605	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q606	8-729-030-53	TRANSISTOR MSD1819A-RT1	
Q606	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q606	8-729-602-21	TRANSISTOR 2SC4154	
Q607	8-729-030-53	TRANSISTOR MSD1819A-RT1	
Q607	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q607	8-729-602-21	TRANSISTOR 2SC4154	
Q701	8-729-403-27	TRANSISTOR XN4401	
Q751	8-729-030-53	TRANSISTOR MSD1819A-RT1	
Q751	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q751	8-729-602-21	TRANSISTOR 2SC4154	
Q752	8-729-013-88	TRANSISTOR RN1302-TE85L	
Q752	8-729-015-76	TRANSISTOR UN5211-TX	

< RESISTOR >

Ref.No.	Part No.	Description	Remark
R601	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R602	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R603	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R604	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R606	1-216-847-11	METAL CHIP 150K 5% 1/16W	(TR480E/TR580E)
R607	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR480E/TR580E)
R608	1-216-864-11	METAL CHIP 0 5% 1/16W	
R609	1-216-838-11	METAL CHIP 27K 5% 1/16W	(TR480E/TR580E)
R610	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR480E/TR580E)
R611	1-216-838-11	METAL CHIP 27K 5% 1/16W	(TR480E/TR580E)
R612	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R613	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R614	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR670E/TR675E/TR680E/TR780E/TR880E)
R615	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR670E/TR675E/TR680E/TR780E/TR880E)
R617	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R619	1-216-803-11	METAL CHIP 33 5% 1/16W	
R620	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R621	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R622	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR670E/TR675E/TR680E/TR780E/TR880E)
R623	1-216-863-11	METAL GLAZE 3.3M 5% 1/16W	
R624	1-216-864-11	METAL CHIP 0 5% 1/16W	
R625	1-216-844-11	METAL CHIP 82K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R626	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R627	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R628	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	(TR480E/TR580E/TR680E)
R628	1-216-834-11	METAL CHIP 12K 5% 1/16W	(TR670E/TR675E/TR780E/TR880E)
R629	1-216-834-11	METAL CHIP 12K 5% 1/16W	(TR480E/TR580E/TR680E)
R629	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR670E/TR675E/TR780E/TR880E)
R630	1-216-864-11	METAL CHIP 0 5% 1/16W	
R631	1-216-864-11	METAL CHIP 0 5% 1/16W	
R634	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R635	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R636	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R637	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R638	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R639	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R640	1-216-815-11	METAL CHIP 330 5% 1/16W	
R641	1-216-864-11	METAL CHIP 0 5% 1/16W	
R643	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R645	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R646	1-216-818-11	METAL CHIP 560 5% 1/16W	
R647	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R648	1-216-818-11	METAL CHIP 560 5% 1/16W	
R649	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R650	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R651	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R652	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R653	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR580E/TR680E)
R654	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR480E/TR670E/TR675E/TR780E/TR880E)
R656	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR480E)
R657	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR580E/TR670E/TR675E/TR680E/TR780E/TR880E)
R658	1-216-864-11	METAL CHIP 0 5% 1/16W	
R659	1-216-817-11	METAL CHIP 470 5% 1/16W	
R661	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R662	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R663	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R664	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R665	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R666	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R667	1-216-820-11	METAL CHIP 820 5% 1/16W	
R668	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R669	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR480E/TR580E)
R670	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR480E/TR580E)
R701	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R702	1-216-833-11	METAL CHIP 10K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R703	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R705	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R708	1-216-864-11	METAL CHIP 0 5% 1/16W	
R709	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R711	1-216-864-11	METAL CHIP 0 5% 1/16W	
R713	1-216-803-11	METAL CHIP 33 5% 1/16W	
R714	1-216-864-11	METAL CHIP 0 5% 1/16W	
R715	1-216-864-11	METAL CHIP 0 5% 1/16W	
R716	1-218-847-11	METAL CHIP 1K 0.50% 1/16W	
R717	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)
R718	1-216-803-11	METAL CHIP 33 5% 1/16W	
R719	1-218-876-11	METAL CHIP 16K 0.50% 1/16W	
R722	1-216-864-11	METAL CHIP 0 5% 1/16W	
R723	1-216-864-11	METAL CHIP 0 5% 1/16W	
R725	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R726	1-216-864-11	METAL CHIP 0 5% 1/16W	
R727	1-216-864-11	METAL CHIP 0 5% 1/16W	
R728	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	(TR480E)
R728	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR580E/TR670E/TR675E/TR680E/TR780E/TR880E)
R740	1-216-864-11	METAL CHIP 0 5% 1/16W	
R741	1-218-855-11	METAL CHIP 2.2K 0.50% 1/16W	
R742	1-218-865-11	METAL CHIP 5.6K 0.50% 1/16W	
R743	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R744	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R745	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R746	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R747	1-216-820-11	METAL CHIP 820 5% 1/16W	
R748	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R749	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R750	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R751	1-216-809-11	METAL CHIP 100 5% 1/16W	
R752	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R753	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R754	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R755	1-216-855-11	METAL CHIP 680K 5% 1/16W	
R756	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R757	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R758	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R759	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R760	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R761	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R762	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R764	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	(TR580E/TR670E/TR675E/TR680E/TR780E/TR880E)
R764	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR480E)
R765	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)
R766	1-216-835-11	METAL CHIP 15K 5% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)

Ref. No.	Part No.	Description	Remark
R767	1-216-850-11	METAL CHIP 270K 5% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)
R768	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)
R769	1-216-850-11	METAL CHIP 270K 5% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)
R770	1-216-835-11	METAL CHIP 15K 5% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)
R771	1-216-803-11	METAL CHIP 33 5% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)
R772	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)
R773	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)
R774	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)
R775	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)
R776	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)
R777	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)
R778	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)
R779	1-218-911-11	METAL CHIP 470K 0.50% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)
R780	1-218-911-11	METAL CHIP 470K 0.50% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)
R781	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)
R782	1-218-911-11	METAL CHIP 470K 0.50% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)
R783	1-218-911-11	METAL CHIP 470K 0.50% 1/16W	(TR580E/TR670E/TR675E/TR780E/TR880E)
R786	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R787	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R788	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R789	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R790	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R792	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R793	1-216-841-11	METAL CHIP 47K 5% 1/16W	

< VIBRATOR >

Ref. No.	Part No.	Description	Remark
X601	1-760-081-21	VIBRATOR, CERAMIC (24MHz)	
X701	1-760-321-11	VIBRATOR, CRYSTAL (28.375MHz)	
X775	1-579-553-11	VIBRATOR (12MHz)	

****

Ref. No.	Part No.	Description	Remark
*	A-7066-045-A	VF-65P BOARD, COMPLETE	(TR480E/TR580E/TR680E/TR780E)

****

(Ref. No. 3,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C901	1-124-635-00	ELECT 220uF 20% 6.3V	
C902	1-163-038-91	CERAMIC CHIP 0.1uF 25V	
C903	1-135-091-91	TANTAL. CHIP 1uF 20% 16V	
C904	1-163-011-11	CERAMIC CHIP 0.0015uF 10% 50V	
C905	1-104-753-11	TANTAL. CHIP 47uF 20% 6.3V	
C906	1-162-638-11	CERAMIC CHIP 1uF 16V	
C907	1-137-306-11	FILM CHIP 0.1uF 5% 16V	
C908	1-163-237-11	CERAMIC CHIP 27PF 5% 50V	
C909	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
⚠C910	1-164-758-11	CERAMIC CHIP 0.0039uF 5% 50V	
⚠C911	1-164-715-11	CERAMIC CHIP 0.0068uF 5% 50V	
C912	1-127-532-11	ELECT(SOLID) 47uF 20% 6.3V	
C913	1-124-577-11	ELECT 82uF 20% 10V	
C914	1-128-007-11	ELECT CHIP 2.2uF 20% 35V	
C915	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C916	1-164-611-11	CERAMIC CHIP 0.001uF 10% 500V	
C917	1-165-319-11	CERAMIC CHIP 0.1uF 50V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN901	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	
CN902	1-573-290-21	PIN, CONNECTOR (1.5MM) (SMD) 4P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D901	8-719-404-19	DIODE LN1251C	
D903	8-719-400-20	DIODE MA152WA	

< IC >

Ref. No.	Part No.	Description	Remark
IC901	8-759-196-14	IC BA7149F-E2	

< COIL >

Ref. No.	Part No.	Description	Remark
L901	1-412-031-11	INDUCTOR CHIP 47uH	
L902	1-410-387-11	INDUCTOR CHIP 33uH	
⚠L903	1-402-680-21	COIL, FERRITE (HCL)	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q902	8-729-106-68	TRANSISTOR 2SD1615A-GP	
Q903	8-729-216-31	TRANSISTOR 2SA1163-G	
Q904	8-729-120-28	TRANSISTOR 2SC1623-L5L6	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R901	1-216-041-00	METAL CHIP 470 5% 1/10W	
R902	1-216-041-00	METAL CHIP 470 5% 1/10W	
R903	1-216-035-00	METAL CHIP 270 5% 1/10W	
R906	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description				Remark
R907	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R908	1-216-111-00	METAL CHIP	390K	5%	1/10W	
R909	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R910	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R911	1-216-160-00	METAL GLAZE	27	5%	1/8W	
R912	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R913	1-216-047-00	METAL CHIP	820	5%	1/10W	
R914	1-216-033-00	METAL CHIP	220	5%	1/10W	
R915	1-216-308-00	METAL CHIP	4.7	5%	1/10W	
R916	1-208-814-11	METAL CHIP	22K	0.50%	1/10W	
R917	1-218-754-11	METAL CHIP	120K	0.50%	1/10W	
R918	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R919	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R920	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R921	1-216-311-00	METAL CHIP	6.8	5%	1/10W	
R922	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R923	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R924	1-216-131-11	METAL CHIP	2.7M	5%	1/10W	
R925	1-216-131-11	METAL CHIP	2.7M	5%	1/10W	
R926	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R927	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R928	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R929	1-216-043-91	METAL GLAZE	560	5%	1/10W	

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV903	1-238-086-11	RES, ADJ, CERMET 470	
RV903	1-238-852-11	RES, ADJ, CERMET 470	
RV904	1-223-566-11	RES, ADJ, METAL GLAZE 1M	

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
⚠T901	1-453-124-11	TRANSFORMER ASSY, FLYBACK	

< THERMISTOR >

Ref. No.	Part No.	Description	Remark
TH901	1-809-350-21	THERMISTOR, NTC (2125)	

< SOCKET >

Ref. No.	Part No.	Description	Remark
W901	1-540-019-21	SOCKET ASSY, CRT	

****

* A-7072-268-A VF-72P BOARD, COMPLETE
(TR670E/TR675E/TR880E)

****

< CAPACITOR >

Ref. No.	Part No.	Description				Remark
C851	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	
C852	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C853	1-104-916-11	TANTAL. CHIP	6.8uF	20%	20V	
C854	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C855	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C856	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C857	1-164-676-11	CERAMIC CHIP	2200PF	5%	16V	
C858	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C859	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C860	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C865	1-162-921-11	CERAMIC CHIP	33PF	5%	50V	
C867	1-107-682-11	CERAMIC CHIP	1uF	10%	16V	
C868	1-165-128-11	CERAMIC CHIP	0.22uF		16V	
C870	1-162-974-11	CERAMIC CHIP	0.01uF		50V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN851	1-766-344-21	CONNECTOR, FFC/FPC 14P	
CN852	1-766-349-21	CONNECTOR, FFC/FPC 19P	
CN853	1-573-305-11	CONNECTOR, BOARD TO BOARD 10P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D851	8-719-989-22	DIODE CL-150R-CD	
D852	8-719-033-15	DIODE HN2D02FU-TE85R	
D852	8-719-043-70	DIODE MA6S121-(TX)	

< IC >

Ref. No.	Part No.	Description	Remark
IC851	8-759-097-75	IC MB3789PFV-G-BND-ER	
IC852	8-759-510-71	IC BA10358F-E2	

< COIL >

Ref. No.	Part No.	Description	Remark
L853	1-412-033-11	INDUCTOR CHIP 220uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q852	8-729-427-74	TRANSISTOR XP4601	
Q853	8-729-924-19	TRANSISTOR DTA123JU	

< RESISTOR >

Ref. No.	Part No.	Description				Remark
R851	1-216-819-11	METAL CHIP	680	5%	1/16W	
R852	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R853	1-218-899-11	METAL CHIP	150K	0.50%	1/16W	
R854	1-218-901-11	METAL CHIP	180K	0.50%	1/16W	
R855	1-218-972-11	METAL GLAZE	39K	5%	1/16W	
R856	1-218-899-11	METAL CHIP	150K	0.50%	1/16W	
R857	1-218-903-11	METAL CHIP	220K	0.50%	1/16W	
R858	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R859	1-218-901-11	METAL CHIP	180K	0.50%	1/16W	
R860	1-218-887-11	METAL CHIP	47K	0.50%	1/16W	
R861	1-218-975-11	METAL GLAZE	68K	5%	1/16W	
R862	1-218-970-11	METAL GLAZE	27K	5%	1/16W	
R863	1-218-979-11	METAL GLAZE	150K	5%	1/16W	
R864	1-218-972-11	METAL GLAZE	39K	5%	1/16W	
R865	1-218-973-11	METAL GLAZE	47K	5%	1/16W	
R867	1-218-982-11	METAL GLAZE	270K	5%	1/16W	
R868	1-218-990-11	CONDCTOR, CHIP (1005)				
R869	1-218-975-11	METAL GLAZE	68K	5%	1/16W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description				Remark
R870	1-218-974-11	METAL GLAZE	56K	5%	1/16W	
R871	1-218-982-11	METAL GLAZE	270K	5%	1/16W	
R872	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R873	1-218-983-11	METAL GLAZE	330K	5%	1/16W	
R874	1-218-979-11	METAL GLAZE	150K	5%	1/16W	
R875	1-218-961-11	METAL GLAZE	4.7K	5%	1/16W	
R876	1-218-965-11	METAL GLAZE	10K	5%	1/16W	
R877	1-216-794-11	METAL CHIP	5.6	5%	1/16W	
R879	1-218-969-11	METAL GLAZE	22K	5%	1/16W	
R881	1-218-985-11	METAL GLAZE	470K	5%	1/16W	
R891	1-216-296-00	METAL CHIP	0	5%	1/8W	

****

* A-7072-269-A VF-73P BOARD, COMPLETE
(TR670E/TR675E/TR880E)
****
(Ref. No. 5,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description				Remark
C901	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C902	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C903	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C904	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C905	1-107-682-11	CERAMIC CHIP	1uF	10%	16V	
C906	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V	
C907	1-107-682-11	CERAMIC CHIP	1uF	10%	16V	
C908	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	
C909	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C910	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C911	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C912	1-162-963-11	CERAMIC CHIP	680PF	10%	50V	
C913	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C914	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C915	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C916	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C917	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C918	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C920	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C921	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C922	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C923	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C924	1-162-926-11	CERAMIC CHIP	82PF	5%	50V	
C925	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C926	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C927	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C928	1-104-912-11	TANTAL. CHIP	3.3uF	20%	16V	
C929	1-104-912-11	TANTAL. CHIP	3.3uF	20%	16V	
C930	1-104-912-11	TANTAL. CHIP	3.3uF	20%	16V	
C931	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C933	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C934	1-165-320-11	CERAMIC CHIP	0.47uF	10%	16V	
C935	1-135-179-21	TANTAL. CHIP	2.2uF	20%	16V	
C936	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	
C937	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C938	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C939	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C940	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	
C941	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V	
C942	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C943	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C945	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C946	1-135-179-21	TANTAL. CHIP	2.2uF	20%	16V	
C947	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C948	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C949	1-135-178-11	TANTAL. CHIP	1.5uF	20%	20V	
C950	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C951	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C952	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C953	1-164-346-11	CERAMIC CHIP	1uF		16V	
C954	1-162-974-11	CERAMIC CHIP	0.01uF		50V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN901	1-766-345-21	CONNECTOR, FFC/FPC 15P	
* CN902	1-573-984-11	CONNECTOR, BOARD TO BOARD 10P	
CN903	1-573-925-11	CONNECTOR, FFC/FPC (ZIF) 16P	
CN903	1-766-677-21	CONNECTOR, FFC/FPC 16P	

< DIODE >

Ref. No.	Part No.	Description		Remark
D901	8-713-102-80	DIODE	1T369-01-T8A	
D902	8-713-102-80	DIODE	1T369-01-T8A	
D903	8-719-404-46	DIODE	MA110	
D903	8-719-404-49	DIODE	MA111	

< IC >

Ref. No.	Part No.	Description		Remark
IC901	8-752-067-59	IC	CXA1785R-T4	
IC902	8-752-371-14	IC	CXD2403AR-T4	
IC903	8-759-251-40	IC	MB88E346PFV-G-BND-ER	

< COIL >

Ref. No.	Part No.	Description	Remark
L901	1-412-951-11	INDUCTOR 10uH	
L902	1-412-960-21	INDUCTOR 56uH	
L903	1-412-956-21	INDUCTOR 27uH	
L904	1-412-959-11	INDUCTOR 47uH	
L905	1-412-949-21	INDUCTOR 6.8uH	
L906	1-412-962-11	INDUCTOR 82uH	

< TRANSISTOR >

Ref. No.	Part No.	Description		Remark
Q901	8-729-427-74	TRANSISTOR	XP4601	
Q902	8-729-402-42	TRANSISTOR	UN5213	
Q903	8-729-120-28	TRANSISTOR	2SC1623-L5L6	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R902	1-218-877-11	METAL CHIP 18K 0.50% 1/16W	
R903	1-218-974-11	METAL GLAZE 56K 5% 1/16W	
R904	1-218-989-11	METAL GLAZE 1M 5% 1/16W	
R906	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R907	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R908	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R910	1-218-946-11	METAL GLAZE 270 5% 1/16W	
R911	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R912	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R913	1-220-397-11	METAL GLAZE 4.7M 5% 1/16W	
R914	1-218-964-11	METAL GLAZE 8.2K 5% 1/16W	
R915	1-218-955-11	METAL GLAZE 1.5K 5% 1/16W	
R918	1-218-959-11	METAL GLAZE 3.3K 5% 1/16W	
R919	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R920	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R921	1-220-397-11	METAL GLAZE 4.7M 5% 1/16W	
R922	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R923	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R924	1-218-949-11	METAL GLAZE 470 5% 1/16W	
R925	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R926	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R930	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R931	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R932	1-218-990-11	CONDCTOR, CHIP (1005)	
R934	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R935	1-218-990-11	CONDCTOR, CHIP (1005)	
R936	1-218-873-11	METAL CHIP 12K 0.50% 1/16W	
R937	1-218-905-11	METAL CHIP 270K 0.50% 1/16W	
R938	1-218-981-11	METAL GLAZE 220K 5% 1/16W	
R939	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R945	1-218-963-11	METAL GLAZE 6.8K 5% 1/16W	
R946	1-218-990-11	CONDCTOR, CHIP (1005)	
R947	1-218-939-11	METAL GLAZE 68 5% 1/16W	
R948	1-218-939-11	METAL GLAZE 68 5% 1/16W	
R949	1-218-939-11	METAL GLAZE 68 5% 1/16W	
R950	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R953	1-218-972-11	METAL GLAZE 39K 5% 1/16W	
R954	1-218-972-11	METAL GLAZE 39K 5% 1/16W	
R955	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R959	1-218-976-11	METAL GLAZE 82K 5% 1/16W	
R960	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R961	1-218-982-11	METAL GLAZE 270K 5% 1/16W	
R969	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R970	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R971	1-218-978-11	METAL GLAZE 120K 5% 1/16W	
R973	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R974	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R979	1-218-981-11	METAL GLAZE 220K 5% 1/16W	

< OSCILLATOR >

Ref. No.	Part No.	Description	Remark
X901	1-579-661-21	OSCILLATOR, CRYSTAL (4.43MHz)	

****

Ref. No.	Part No.	Description	Remark
*	A-7066-393-A	VS-125P BOARD, COMPLETE (TR780E) *********************************	
*	A-7066-411-A	VS-125P BOARD, COMPLETE (TR480E) *********************************	
*	A-7066-414-A	VS-125P BOARD, COMPLETE (TR580E:AEP,UK) **	
*	A-7066-479-A	VS-125P BOARD, COMPLETE (TR670E) *********************************	
*	A-7066-480-A	VS-125P BOARD, COMPLETE (TR680E) *********************************	
*	A-7066-549-A	VS-125P BOARD, COMPLETE (TR880E) *********************************	
*	A-7085-036-A	VS-125P BOARD, COMPLETE(TR580E:E,HK,AUS) ***	
*	A-7085-038-A	VS-125P BOARD, COMPLETE (TR675E) *********************************	

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C101	1-162-921-11	CERAMIC CHIP 33PF 5% 50V (TR480E/TR580E/TR670E/TR675E)	
C102	1-162-911-11	CERAMIC CHIP 6PF 0.5PF 50V (TR680E/TR780E/TR880E)	
C102	1-162-922-11	CERAMIC CHIP 39PF 5% 50V (TR480E/TR580E/TR670E/TR675E)	
C103	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C104	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C106	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C107	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C108	1-162-926-11	CERAMIC CHIP 82PF 5% 50V	
C109	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C110	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C111	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C112	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C113	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	
C114	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C115	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C116	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C117	1-104-852-11	TANTAL. CHIP 22uF 20% 6.3V	
C118	1-104-852-11	TANTAL. CHIP 22uF 20% 6.3V	
C119	1-162-961-11	CERAMIC CHIP 330PF 10% 50V	
C120	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C121	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	

Ref. No.	Part No.	Description	Remark
C122	1-162-961-11	CERAMIC CHIP 330PF 10% 50V	
C123	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C124	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C128	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C131	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C134	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C135	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C136	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C137	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C143	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
C145	1-104-852-11	TANTAL. CHIP 22uF 20% 6.3V	
C146	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C147	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C148	1-162-958-11	CERAMIC CHIP 270PF 5% 50V	
C149	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR480E/TR580E/TR670E/TR675E)
C150	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR480E/TR580E/TR670E/TR675E)
C151	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(TR480E/TR580E/TR670E/TR675E)
C152	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR480E/TR580E/TR670E/TR675E)
C153	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C154	1-162-917-11	CERAMIC CHIP 15PF 5% 50V	(TR480E/TR580E/TR670E/TR675E)
C155	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR680E/TR780E/TR880E)
C156	1-162-910-11	CERAMIC CHIP 5PF 0.25PF 50V	(TR480E/TR580E/TR670E/TR675E)
C157	1-162-916-11	CERAMIC CHIP 12PF 5% 50V	
C158	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(TR480E/TR580E/TR670E/TR675E)
C159	1-162-922-11	CERAMIC CHIP 39PF 5% 50V	(TR480E/TR580E/TR670E/TR675E)
C160	1-162-920-11	CERAMIC CHIP 27PF 5% 50V	(TR480E/TR580E/TR670E/TR675E)
C161	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C162	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TR480E/TR580E/TR670E/TR675E)
C163	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TR480E/TR580E/TR670E/TR675E)
C164	1-162-916-11	CERAMIC CHIP 12PF 5% 50V	(TR480E/TR580E/TR670E/TR675E)
C165	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	(TR480E/TR580E/TR670E/TR675E)
C166	1-162-958-11	CERAMIC CHIP 270PF 5% 50V	
C167	1-162-926-11	CERAMIC CHIP 82PF 5% 50V	(TR480E/TR580E/TR670E/TR675E)
C168	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(TR480E/TR580E/TR670E/TR675E)
C169	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	(TR480E/TR580E/TR670E/TR675E)
C170	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	(TR680E/TR780E/TR880E)
C171	1-162-920-11	CERAMIC CHIP 27PF 5% 50V	(TR680E/TR780E/TR880E)
C172	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	(TR480E/TR580E/TR670E/TR675E)
C173	1-164-155-11	CERAMIC CHIP 75PF 5% 50V	(TR680E/TR780E/TR880E)
C175	1-162-910-11	CERAMIC CHIP 5PF 0.25PF 50V	(TR680E/TR780E/TR880E)
C176	1-162-922-11	CERAMIC CHIP 39PF 5% 50V	(TR680E/TR780E/TR880E)
C177	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C178	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C179	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C190	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C202	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	(TR680E/TR780E/TR880E)
C203	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C204	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C205	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR480E/TR580E)
C206	1-164-489-11	CERAMIC CHIP 0.22uF 10% 16V	
C207	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C208	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C209	1-126-246-11	ELECT CHIP 220uF 20% 4V	
C210	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	
C211	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C212	1-162-995-11	CERAMIC CHIP 0.022uF 50V	
C213	1-135-176-21	TANTALUM CHIP 0.68uF 10% 20V	
C214	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C215	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C216	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C217	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C218	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C220	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C221	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C222	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C223	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C227	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C228	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C229	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C230	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C231	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C234	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C235	1-126-207-11	ELECT CHIP 33uF 20% 4V	
C237	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C238	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C239	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C240	1-164-392-11	CERAMIC CHIP 390PF 5% 50V	
C241	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C242	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	

Ref. No.	Part No.	Description	Remark
C243	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C244	1-162-959-11	CERAMIC CHIP 330PF 5% 50V	
C245	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C247	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C248	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	(TR680E/TR780E/TR880E)
C250	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	(TR680E/TR780E/TR880E)
C251	1-162-926-11	CERAMIC CHIP 82PF 5% 50V	(TR680E/TR780E/TR880E)
C251	1-164-218-11	CERAMIC CHIP 180PF 0.25PF 50V	(TR480E/TR580E/TR670E/TR675E)
C258	1-164-346-11	CERAMIC CHIP 1uF 16V	
C262	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR480E/TR580E/TR670E/TR675E)
C263	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C264	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C265	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TR480E/TR580E/TR670E/TR675E)
C266	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C267	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C268	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C271	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C272	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C273	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C274	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C275	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	(TR480E/TR580E/TR670E/TR675E)
C276	1-162-916-11	CERAMIC CHIP 12PF 5% 50V	(TR480E/TR580E/TR670E/TR675E)
C279	1-162-958-11	CERAMIC CHIP 270PF 5% 50V	(TR480E/TR580E/TR670E/TR675E)
C281	1-164-218-11	CERAMIC CHIP 180PF 0.25PF 50V	(TR480E/TR580E/TR670E/TR675E)
C282	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	(TR480E/TR580E/TR670E/TR675E)
C284	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C285	1-135-318-11	TANTAL. CHIP 33uF 20% 4V	(TR480E/TR580E/TR670E/TR675E)
C286	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C288	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	(TR480E/TR580E/TR670E/TR675E)
C289	1-162-913-11	CERAMIC CHIP 8PF 0.5PF 50V	
C290	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR480E/TR580E/TR670E/TR675E)
C291	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	(TR480E/TR580E/TR670E/TR675E)
C292	1-164-346-11	CERAMIC CHIP 1uF 16V	(TR680E/TR780E/TR880E)
C293	1-162-918-11	CERAMIC CHIP 18PF 5% 50V	
C294	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR680E/TR780E/TR880E)
C295	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	(TR680E/TR780E/TR880E)
C296	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR680E/TR780E/TR880E)
C297	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	(TR680E/TR780E/TR880E)
C298	1-164-360-11	CERAMIC CHIP 0.1uF 16V	(TR680E/TR780E/TR880E)
C299	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR480E/TR580E/TR670E/TR675E)
C300	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR680E/TR780E/TR880E)
C301	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TR480E/TR580E/TR670E/TR675E)
C302	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	(TR680E/TR780E/TR880E)
C303	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR680E/TR780E/TR880E)
C304	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C305	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TR480E/TR580E/TR670E/TR675E)
C306	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	
C307	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C308	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C310	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C311	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C312	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C314	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C315	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	
C316	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C322	1-164-360-11	CERAMIC CHIP 0.1uF 16V	(TR480E/TR580E)
C323	1-164-360-11	CERAMIC CHIP 0.1uF 16V	(TR480E/TR580E)
C328	1-164-361-11	CERAMIC CHIP 0.047uF 16V	
C331	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C333	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	
C398	1-162-925-11	CERAMIC CHIP 68PF 5% 50V	(TR680E/TR780E/TR880E)
C500	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
C501	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C502	1-164-361-11	CERAMIC CHIP 0.047uF 16V	
C503	1-124-778-00	ELECT CHIP 22uF 20% 6.3V	
C504	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C506	1-124-778-00	ELECT CHIP 22uF 20% 6.3V	
C507	1-162-918-11	CERAMIC CHIP 18PF 5% 50V	
C508	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C509	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C510	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C511	1-164-361-11	CERAMIC CHIP 0.047uF 16V	
C512	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C513	1-164-361-11	CERAMIC CHIP 0.047uF 16V	
C514	1-162-974-11	CERAMIC CHIP 0.01uF 50V	

VS-125

Ref.No.	Part No.	Description	Remark
C515	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C516	1-164-361-11	CERAMIC CHIP 0.047uF 16V	
C518	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C519	1-164-346-11	CERAMIC CHIP 1uF 16V	
C521	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C522	1-164-361-11	CERAMIC CHIP 0.047uF 16V	
C523	1-164-492-11	CERAMIC CHIP 0.15uF 10% 16V	
C524	1-164-492-11	CERAMIC CHIP 0.15uF 10% 16V	
C526	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C527	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C528	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C529	1-164-677-11	CERAMIC CHIP 0.033uF 10% 16V	
C530	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C531	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C532	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C533	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C534	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C535	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
C536	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
C537	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C538	1-162-995-11	CERAMIC CHIP 0.022uF 50V	
C539	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C540	1-162-912-11	CERAMIC CHIP 7PF 0.5PF 50V	
C541	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C543	1-162-912-11	CERAMIC CHIP 7PF 0.5PF 50V	
C544	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C545	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C547	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C548	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C549	1-162-995-11	CERAMIC CHIP 0.022uF 50V	
C550	1-128-530-11	ELECT CHIP 33uF 20% 10V	
C559	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C560	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C561	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C562	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C563	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C564	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C565	1-162-995-11	CERAMIC CHIP 0.022uF 50V	
C566	1-162-995-11	CERAMIC CHIP 0.022uF 50V	
C567	1-164-173-11	CERAMIC CHIP 0.0039uF 10% 50V	
C568	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C569	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C570	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C571	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C572	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C573	1-162-909-11	CERAMIC CHIP 4PF 0.25PF 50V	
C951	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C953	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
C955	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C959	1-164-156-11	CERAMIC CHIP 0.1uF 25V	(TR480E/TR580E)
C961	1-164-346-11	CERAMIC CHIP 1uF 16V	(TR480E/TR580E)
C1251	1-164-156-11	CERAMIC CHIP 0.1uF 25V	(TR670E/TR675E/TR680E/TR780E/TR880E)
C1252	1-164-505-11	CERAMIC CHIP 2.2uF 16V	(TR670E/TR675E/TR680E/TR780E/TR880E)
C1254	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TR680E/TR780E/TR880E)
C1255	1-164-005-11	CERAMIC CHIP 0.47uF 25V	(TR680E/TR780E/TR880E)
C1256	1-164-005-11	CERAMIC CHIP 0.47uF 25V	(TR670E/TR675E/TR680E/TR780E/TR880E)
C1257	1-126-246-11	ELECT CHIP 220uF 20% 4V	(TR680E/TR780E/TR880E)
C1258	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	(TR680E/TR780E/TR880E)
C1260	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TR680E/TR780E/TR880E)
C1261	1-164-156-11	CERAMIC CHIP 0.1uF 25V	(TR680E/TR780E/TR880E)
C1262	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TR680E/TR780E/TR880E)
C1263	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TR670E/TR675E/TR680E/TR780E/TR880E)
C1264	1-164-156-11	CERAMIC CHIP 0.1uF 25V	(TR670E/TR675E/TR680E/TR780E/TR880E)
C1268	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TR670E/TR675E/TR680E/TR780E/TR880E)
		< CONNECTOR >	
CN101	1-691-492-21	CONNECTOR, FFC/FPC 13P	
CN102	1-580-789-21	PIN, CONNECTOR (SMD) 6P	
CN201	1-766-343-21	CONNECTOR, FFC/FPC 13P	
* CN202	1-691-929-11	CONNECTOR, BOARD TO BOARD 34P	
* CN203	1-764-396-21	CONNECTOR, BOARD TO BOARD 42P	
* CN204	1-573-306-11	CONNECTOR, BOARD TO BOARD 12P	
* CN205	1-573-313-11	CONNECTOR, BOARD TO BOARD 26P	(TR680E/TR780E/TR880E)
CN206	1-766-344-21	CONNECTOR, FFC/FPC 14P	
CN501	1-766-354-21	CONNECTOR, FFC/FPC 24P	
CN502	1-764-708-11	CONNECTOR, FFC/FPC (LIF) 9P	
CN503	1-764-717-11	CONNECTOR, FFC/FPC (LIF) 18P	
CN504	1-695-325-11	CONNECTOR, BOARD TO BOARD 42P	
* CN505	1-764-397-21	CONNECTOR, BOARD TO BOARD 42P	
		< DIODE >	
D101	8-719-800-76	DIODE 1SS226	(TR480E/TR580E/TR670E/TR675E)
D201	8-719-027-50	DIODE MA142WK-(TX)	
D204	8-719-027-50	DIODE MA142WK-(TX)	
D208	8-719-027-50	DIODE MA142WK-(TX)	
D214	8-719-404-49	DIODE MA111	
D216	8-719-027-50	DIODE MA142WK-(TX)	

Ref. No.	Part No.	Description	Remark
D217	8-719-404-49	DIODE MA111	
D218	8-719-800-76	DIODE 1SS226	
D219	8-719-404-49	DIODE MA111	
D321	8-719-052-33	DIODE MAZV082DFL	
D323	8-719-017-25	DIODE 02DZ13-TPH3	(TR680E/TR780E/TR880E)
D324	8-719-017-25	DIODE 02DZ13-TPH3	(TR680E/TR780E/TR880E)
⚠D501	8-719-421-27	DIODE MA728	
D504	8-719-404-49	DIODE MA111	
D505	8-719-404-49	DIODE MA111	
D506	8-719-404-49	DIODE MA111	
D1251	8-719-027-50	DIODE MA142WK-(TX)	(TR670E/TR675E/TR680E/TR780E/TR880E)
D1252	8-719-027-50	DIODE MA142WK-(TX)	(TR680E/TR780E/TR880E)
D1253	8-719-052-33	DIODE MAZV082DFL	(TR680E/TR780E/TR880E)
D1254	8-719-052-33	DIODE MAZV082DFL	(TR680E/TR780E/TR880E)
D1255	8-719-017-25	DIODE 02DZ13-TPH3	(TR680E/TR780E/TR880E)

< FILTER >

Ref. No.	Part No.	Description	Remark
FL202	1-239-010-11	FILTER, LOW PASS (CCD. PAL. Y)	(TR680E/TR780E/TR880E)
FL202	1-239-055-21	FILTER, LOW PASS (CCD. PAL. Y)	(TR480E/TR580E/TR670E/TR675E)

< IC >

Ref. No.	Part No.	Description	Remark
IC102	8-752-069-78	IC CXA1704R-T4	
IC201	8-752-072-54	IC CXA1700AR-T6	(TR480E/TR580E/TR670E/TR675E)
IC201	8-752-072-55	IC CXA1810AR-T6	(TR680E/TR780E/TR880E)
IC203	8-752-351-95	IC CXL1506N-T4	
IC204	8-752-351-95	IC CXL1506N-T4	(TR680E/TR780E/TR880E)
IC205	8-752-053-21	IC CXA1211M	
IC208	8-759-710-07	IC NJM2234M	(TR480E/TR580E)
IC209	8-759-327-93	IC TK16031AMTL	
IC251	8-752-069-60	IC CXA1812Q-T4	(TR670E/TR675E/TR680E/TR780E/TR880E)
IC501	8-759-278-57	IC AK6420HF-E2	
IC502	8-759-295-62	IC S-8423DFS-T2	
IC503	8-759-328-92	IC MB89098PFV-G-127-BND	
IC505	8-752-862-21	IC CXP87132-043R	
IC506	8-759-169-11	IC CXA1575M-E2	
IC508	8-759-267-62	IC MB4470APFQ-G-BND-ER	
IC951	8-759-290-12	IC M62370GP-650D	

< COIL >

Ref. No.	Part No.	Description	Remark
L102	1-412-066-21	INDUCTOR CHIP 220uH	
L103	1-412-066-21	INDUCTOR CHIP 220uH	
L104	1-412-951-11	INDUCTOR 10uH	

Ref. No.	Part No.	Description	Remark
L105	1-412-066-21	INDUCTOR CHIP 220uH	
L108	1-412-060-11	INDUCTOR CHIP 22uH	
L109	1-412-957-11	INDUCTOR 33uH	
L110	1-410-657-21	INDUCTOR CHIP 180uH	(TR480E/TR580E/TR670E/TR675E)
L111	1-412-950-11	INDUCTOR 8.2uH	(TR480E/TR580E/TR670E/TR675E)
L112	1-412-280-31	INDUCTOR 330uH	
L113	1-412-957-11	INDUCTOR 33uH	(TR480E/TR580E/TR670E/TR675E)
L114	1-412-282-41	INDUCTOR 470uH	
L115	1-412-280-31	INDUCTOR 330uH	(TR480E/TR580E/TR670E/TR675E)
L116	1-410-657-21	INDUCTOR CHIP 180uH	
L118	1-410-655-31	INDUCTOR CHIP 120uH	(TR480E/TR580E/TR670E/TR675E)
L119	1-412-958-21	INDUCTOR 39uH	(TR680E/TR780E/TR880E)
L120	1-412-951-11	INDUCTOR 10uH	(TR480E/TR580E/TR670E/TR675E)
L121	1-412-952-11	INDUCTOR 12uH	(TR680E/TR780E/TR880E)
L122	1-412-058-11	INDUCTOR CHIP 10uH	
L122	1-414-267-11	INDUCTOR 10uH	
L123	1-412-949-21	INDUCTOR 6.8uH	(TR680E/TR780E/TR880E)
L201	1-412-963-11	INDUCTOR 100uH	(TR680E/TR780E/TR880E)
L202	1-414-078-11	INDUCTOR 10uH	
L204	1-412-963-11	INDUCTOR 100uH	(TR480E/TR580E/TR670E/TR675E)
L207	1-216-295-91	CONDUCTOR, CHIP (2012)	(TR480E/TR580E/TR670E/TR675E)
L209	1-412-960-21	INDUCTOR 56uH	(TR480E/TR580E/TR670E/TR675E)
L210	1-412-953-11	INDUCTOR 15uH	
L211	1-412-954-11	INDUCTOR 18uH	
L213	1-412-953-11	INDUCTOR 15uH	(TR480E/TR580E/TR670E/TR675E)
L214	1-412-960-21	INDUCTOR 56uH	(TR480E/TR580E/TR670E/TR675E)
L399	1-412-950-11	INDUCTOR 8.2uH	(TR680E/TR780E/TR880E)
L500	1-414-078-11	INDUCTOR 10uH	
L501	1-414-078-11	INDUCTOR 10uH	
L503	1-412-961-11	INDUCTOR 68uH	
L504	1-414-078-11	INDUCTOR 10uH	
L506	1-414-078-11	INDUCTOR 10uH	
L951	1-414-078-11	INDUCTOR 10uH	
L952	1-414-072-11	INDUCTOR 1uH	
L1251	1-414-078-11	INDUCTOR 10uH	(TR680E/TR780E/TR880E)
L1252	1-414-078-11	INDUCTOR 10uH	(TR670E/TR675E/TR680E/TR780E/TR880E)

< IC LINK >

Ref. No.	Part No.	Description	Remark
⚠PS500	1-576-122-21	LINK, IC	
⚠PS501	1-576-122-21	LINK, IC	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
		< TRANSISTOR >	
Q101	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q102	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q103	8-729-216-22	TRANSISTOR 2SA1162	
Q104	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q105	8-729-402-42	TRANSISTOR UN5213	
Q106	8-729-402-42	TRANSISTOR UN5213	
Q109	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q111	8-729-015-74	TRANSISTOR UN5111-TX	(TR480E/TR580E/TR670E/TR675E)
Q112	8-729-117-73	TRANSISTOR 2SC4178-F14	(TR480E/TR580E/TR670E/TR675E)
Q113	8-729-420-24	TRANSISTOR 2SB1218A-QRS	(TR480E/TR580E/TR670E/TR675E)
Q114	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q115	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	(TR480E/TR580E/TR670E/TR675E)
Q116	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	(TR680E/TR780E/TR880E)
Q117	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR480E/TR580E/TR670E/TR675E)
Q118	8-729-420-24	TRANSISTOR 2SB1218A-QRS	(TR680E/TR780E/TR880E)
Q119	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR480E/TR580E/TR670E/TR675E)
Q121	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	(TR680E/TR780E/TR880E)
Q124	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR680E/TR780E/TR880E)
Q125	8-729-402-42	TRANSISTOR UN5213	(TR680E/TR780E/TR880E)
Q126	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q127	8-729-402-42	TRANSISTOR UN5213	
Q129	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q131	8-729-015-74	TRANSISTOR UN5111-TX	
Q132	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q133	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	
Q134	8-729-402-48	TRANSISTOR UN521E-TX	
Q135	8-729-402-48	TRANSISTOR UN521E-TX	
Q136	8-729-420-53	TRANSISTOR UN5115	(TR680E/TR780E/TR880E)
Q202	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q204	8-729-402-42	TRANSISTOR UN5213	
Q214	8-729-420-20	TRANSISTOR XN4312	
Q217	8-729-420-12	TRANSISTOR XN4213	
Q219	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q221	8-729-013-15	TRANSISTOR 2SC4909-TL	(TR680E/TR780E/TR880E)
Q222	8-729-403-35	TRANSISTOR UN5113	(TR680E/TR780E/TR880E)
Q223	8-729-013-15	TRANSISTOR 2SC4909-TL	(TR680E/TR780E/TR880E)
Q224	8-729-402-42	TRANSISTOR UN5213	(TR680E/TR780E/TR880E)
Q225	8-729-015-76	TRANSISTOR UN5211-TX	
Q226	8-729-807-86	TRANSISTOR 2SB1295-UL5	
Q227	8-729-402-42	TRANSISTOR UN5213	
Q228	8-729-807-86	TRANSISTOR 2SB1295-UL5	
Q230	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q232	8-729-420-24	TRANSISTOR 2SB1218A-QRS	(TR480E/TR580E/TR670E/TR675E)
Q234	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR480E/TR580E/TR670E/TR675E)
Q235	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q236	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR480E/TR580E/TR670E/TR675E)
Q237	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q238	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR480E/TR580E/TR670E/TR675E)
Q240	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR480E/TR580E/TR670E/TR675E)
Q241	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR480E/TR580E/TR670E/TR675E)
Q242	8-729-420-24	TRANSISTOR 2SB1218A-QRS	(TR480E/TR580E/TR670E/TR675E)
Q243	8-729-402-42	TRANSISTOR UN5213	(TR680E/TR780E/TR880E)
Q244	8-729-402-42	TRANSISTOR UN5213	
Q246	8-729-402-81	TRANSISTOR XN4501	(TR480E/TR580E/TR670E/TR675E)
Q247	8-729-402-42	TRANSISTOR UN5213	(TR480E/TR580E/TR670E/TR675E)
Q248	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q249	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q253	8-729-420-56	TRANSISTOR UN511E	
Q254	8-729-403-35	TRANSISTOR UN5113	
Q255	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q256	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR480E/TR580E/TR670E/TR675E)
Q257	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR480E/TR580E/TR670E/TR675E)
Q258	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q259	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q260	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q261	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR480E/TR580E)
Q265	8-729-823-16	TRANSISTOR 2SC4555-5.6.7	
Q266	8-729-402-42	TRANSISTOR UN5213	(TR480E/TR580E/TR670E/TR675E)
Q267	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q500	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q501	8-729-403-27	TRANSISTOR XN4401	
Q502	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q503	8-729-402-81	TRANSISTOR XN4501	
Q504	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q506	8-729-402-42	TRANSISTOR UN5213	

Ref. No.	Part No.	Description	Remark
Q507	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q508	8-729-807-87	TRANSISTOR 2SB1295-UL6	
Q509	8-729-420-20	TRANSISTOR XN4312	
Q510	8-729-402-42	TRANSISTOR UN5213	
Q511	8-729-402-42	TRANSISTOR UN5213	
Q951	8-729-101-07	TRANSISTOR 2SB798-DL	
Q952	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q956	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q958	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR480E/TR580E)
Q960	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR480E/TR580E)
Q1252	8-729-402-42	TRANSISTOR UN5213	(TR670E/TR675E/TR680E/TR780E/TR880E)
Q1253	8-729-823-16	TRANSISTOR 2SC4555-5.6.7	(TR680E/TR780E/TR880E)
Q1254	8-729-823-16	TRANSISTOR 2SC4555-5.6.7	(TR680E/TR780E/TR880E)
Q1259	8-729-420-20	TRANSISTOR XN4312	
		< RESISTOR >	
R100	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TR680E/TR780E/TR880E)
R101	1-216-864-11	METAL CHIP 0 5% 1/16W	
R102	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R103	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R104	1-216-815-11	METAL CHIP 330 5% 1/16W	(TR680E/TR780E/TR880E)
R104	1-216-819-11	METAL CHIP 680 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R105	1-216-816-11	METAL CHIP 390 5% 1/16W	(TR680E/TR780E/TR880E)
R105	1-216-819-11	METAL CHIP 680 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R106	1-216-814-11	METAL CHIP 270 5% 1/16W	
R107	1-216-813-11	METAL CHIP 220 5% 1/16W	
R108	1-216-800-11	METAL GLAZE 18 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R108	1-216-801-11	METAL CHIP 22 5% 1/16W	(TR680E/TR780E/TR880E)
R109	1-216-803-11	METAL CHIP 33 5% 1/16W	(TR680E/TR780E/TR880E)
R109	1-216-805-11	METAL CHIP 47 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R110	1-216-818-11	METAL CHIP 560 5% 1/16W	
R111	1-218-875-11	METAL CHIP 15K 0.50% 1/16W	
R112	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R114	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R114	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	(TR680E/TR780E/TR880E)
R117	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R118	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R119	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)

Ref. No.	Part No.	Description	Remark
R119	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR680E/TR780E/TR880E)
R120	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R122	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R123	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R124	1-216-864-11	METAL CHIP 0 5% 1/16W	
R126	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R127	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R128	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R129	1-809-357-21	THERMISTOR, NTC (2125)	(TR480E/TR580E/TR670E/TR675E)
R130	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R131	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R132	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R133	1-216-819-11	METAL CHIP 680 5% 1/16W	
R134	1-216-834-11	METAL CHIP 12K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R135	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R136	1-216-820-11	METAL CHIP 820 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R137	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R138	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R139	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R140	1-216-813-11	METAL CHIP 220 5% 1/16W	
R141	1-216-817-11	METAL CHIP 470 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R142	1-216-818-11	METAL CHIP 560 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R143	1-216-808-11	METAL CHIP 82 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R144	1-216-818-11	METAL CHIP 560 5% 1/16W	
R146	1-216-809-11	METAL CHIP 100 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R147	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R148	1-216-813-11	METAL CHIP 220 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R149	1-216-813-11	METAL CHIP 220 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R150	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R151	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R152	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R153	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R154	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)

Ref. No.	Part No.	Description	Remark
R155	1-216-817-11	METAL CHIP 470 5% 1/16W	(TR680E/TR780E/TR880E)
R156	1-216-817-11	METAL CHIP 470 5% 1/16W	(TR680E/TR780E/TR880E)
R157	1-216-817-11	METAL CHIP 470 5% 1/16W	(TR680E/TR780E/TR880E)
R158	1-216-836-11	METAL CHIP 18K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R159	1-216-836-11	METAL CHIP 18K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R160	1-216-818-11	METAL CHIP 560 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R161	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR680E/TR780E/TR880E)
R162	1-216-818-11	METAL CHIP 560 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R163	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R164	1-216-804-11	METAL CHIP 39 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R165	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R166	1-216-816-11	METAL CHIP 390 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R167	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR680E/TR780E/TR880E)
R168	1-216-815-11	METAL CHIP 330 5% 1/16W	(TR680E/TR780E/TR880E)
R169	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR680E/TR780E/TR880E)
R171	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R173	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	(TR680E/TR780E/TR880E)
R174	1-216-816-11	METAL CHIP 390 5% 1/16W	(TR680E/TR780E/TR880E)
R175	1-216-815-11	METAL CHIP 330 5% 1/16W	(TR680E/TR780E/TR880E)
R175	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R178	1-216-809-11	METAL CHIP 100 5% 1/16W	
R179	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R180	1-216-809-11	METAL CHIP 100 5% 1/16W	
R181	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R182	1-216-817-11	METAL CHIP 470 5% 1/16W	(TR680E/TR780E/TR880E)
R185	1-216-847-11	METAL CHIP 150K 5% 1/16W	
R186	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R187	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R188	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R189	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R190	1-216-817-11	METAL CHIP 470 5% 1/16W	(TR680E/TR780E/TR880E)
R191	1-216-815-11	METAL CHIP 330 5% 1/16W	(TR680E/TR780E/TR880E)
R193	1-216-815-11	METAL CHIP 330 5% 1/16W	
R194	1-216-818-11	METAL CHIP 560 5% 1/16W	
R195	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R196	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R201	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R202	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R203	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R206	1-216-817-11	METAL CHIP 470 5% 1/16W	(TR680E/TR780E/TR880E)
R206	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R207	1-216-804-11	METAL CHIP 39 5% 1/16W	
R208	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR680E/TR780E/TR880E)
R209	1-216-814-11	METAL CHIP 270 5% 1/16W	
R210	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R211	1-216-803-11	METAL CHIP 33 5% 1/16W	
R213	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R214	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R215	1-216-819-11	METAL CHIP 680 5% 1/16W	
R216	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R217	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R218	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R219	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R220	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TR480E/TR580E)
R221	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TR480E/TR580E)
R222	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TR480E/TR580E)
R223	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR480E/TR580E)
R224	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R226	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R228	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R229	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R230	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R231	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R232	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R234	1-216-864-11	METAL CHIP 0 5% 1/16W	
R235	1-218-877-11	METAL CHIP 18K 0.50% 1/16W	
R245	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R246	1-216-819-11	METAL CHIP 680 5% 1/16W	
R247	1-216-815-11	METAL CHIP 330 5% 1/16W	
R253	1-218-849-11	METAL CHIP 1.2K 0.50% 1/16W	
R255	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R256	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R259	1-218-859-11	METAL CHIP 3.3K 0.50% 1/16W	
R261	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R262	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R263	1-218-839-11	METAL GLAZE 470 0.50% 1/16W	
R264	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	(TR680E/TR780E/TR880E)
R265	1-216-818-11	METAL CHIP 560 5% 1/16W	
R266	1-218-837-11	METAL GLAZE 390 0.50% 1/16W	(TR680E/TR780E/TR880E)
R272	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R273	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R274	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R279	1-216-819-11	METAL CHIP 680 5% 1/16W	
R280	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R282	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R283	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R284	1-216-295-91	CONDUCTOR, CHIP (2012)	(TR480E/TR580E/TR670E/TR675E)
R285	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R286	1-216-818-11	METAL CHIP 560 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R287	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR680E/TR780E/TR880E)
R288	1-216-844-11	METAL CHIP 82K 5% 1/16W	
R289	1-216-810-11	METAL CHIP 120 5% 1/16W	
R291	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R292	1-216-864-11	METAL CHIP 0 5% 1/16W	
R293	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R296	1-216-815-11	METAL CHIP 330 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R297	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R300	1-216-817-11	METAL CHIP 470 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R302	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R303	1-216-809-11	METAL CHIP 100 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R304	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R305	1-216-820-11	METAL CHIP 820 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R307	1-216-813-11	METAL CHIP 220 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R308	1-216-844-11	METAL CHIP 82K 5% 1/16W	
R309	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R312	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R313	1-216-820-11	METAL CHIP 820 5% 1/16W	
R314	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R315	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R316	1-216-815-11	METAL CHIP 330 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R317	1-216-820-11	METAL CHIP 820 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R318	1-216-820-11	METAL CHIP 820 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R319	1-216-818-11	METAL CHIP 560 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R320	1-216-817-11	METAL CHIP 470 5% 1/16W	
R321	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R322	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R323	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R324	1-216-820-11	METAL CHIP 820 5% 1/16W	
R325	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R327	1-216-820-11	METAL CHIP 820 5% 1/16W	
R328	1-216-820-11	METAL CHIP 820 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R329	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R330	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R331	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R332	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R334	1-216-815-11	METAL CHIP 330 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R338	1-216-811-11	METAL CHIP 150 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R339	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R342	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R343	1-216-853-11	METAL CHIP 470K 5% 1/16W	(TR680E/TR780E/TR880E)
R346	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TR680E/TR780E/TR880E)
R347	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R348	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R350	1-216-844-11	METAL CHIP 82K 5% 1/16W	(TR680E/TR780E/TR880E)
R351	1-216-810-11	METAL CHIP 120 5% 1/16W	(TR680E/TR780E/TR880E)
R354	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R355	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R356	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R357	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TR480E/TR580E/TR670E/TR675E)
R358	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R359	1-216-817-11	METAL CHIP 470 5% 1/16W	
R360	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R361	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R362	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R363	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	

Ref. No.	Part No.	Description				Remark
R365	1-216-864-11	METAL CHIP	0	5%	1/16W	(TR480E/TR580E/TR670E/TR675E)
R366	1-216-864-11	METAL CHIP	0	5%	1/16W	(TR480E/TR580E/TR670E/TR675E)
R368	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R373	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R375	1-216-864-11	METAL CHIP	0	5%	1/16W	(TR680E/TR780E/TR880E)
R377	1-216-864-11	METAL CHIP	0	5%	1/16W	(TR480E/TR580E)
R378	1-216-864-11	METAL CHIP	0	5%	1/16W	(TR480E/TR580E)
R380	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R381	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R383	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R387	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R391	1-216-864-11	METAL CHIP	0	5%	1/16W	
R395	1-216-820-11	METAL CHIP	820	5%	1/16W	(TR680E/TR780E/TR880E)
R395	1-216-864-11	METAL CHIP	0	5%	1/16W	(TR480E/TR580E/TR670E/TR675E)
R398	1-216-820-11	METAL CHIP	820	5%	1/16W	
R399	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R500	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R501	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R502	1-216-864-11	METAL CHIP	0	5%	1/16W	
R503	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R505	1-216-864-11	METAL CHIP	0	5%	1/16W	
R506	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	(TR670E/TR675E/TR880E)
R506	1-216-841-11	METAL CHIP	47K	5%	1/16W	(TR480E/TR580E/TR680E/TR780E)
R507	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R508	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R509	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R510	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R511	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R512	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R513	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R514	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R515	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R517	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R518	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R519	1-216-817-11	METAL CHIP	470	5%	1/16W	
R520	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R522	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R523	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R525	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R526	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R527	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R528	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R529	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R530	1-216-019-00	METAL CHIP	56	5%	1/10W	
R531	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R532	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R533	1-217-671-11	METAL CHIP	1	5%	1/10W	
R534	1-217-671-11	METAL CHIP	1	5%	1/10W	
R535	1-217-671-11	METAL CHIP	1	5%	1/10W	
R536	1-217-671-11	METAL CHIP	1	5%	1/10W	
R537	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R538	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R539	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R540	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R541	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R542	1-216-864-11	METAL CHIP	0	5%	1/16W	
R543	1-216-864-11	METAL CHIP	0	5%	1/16W	
R544	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R546	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R548	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R549	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R550	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R551	1-216-864-11	METAL CHIP	0	5%	1/16W	
R552	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R553	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R554	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R556	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R558	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R561	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R562	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R563	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R567	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R569	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R570	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R571	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R572	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R573	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R575	1-216-864-11	METAL CHIP	0	5%	1/16W	
R577	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R578	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R580	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R581	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R582	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R584	1-216-864-11	METAL CHIP	0	5%	1/16W	
R585	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R586	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R587	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R588	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R589	1-216-864-11	METAL CHIP	0	5%	1/16W	
R590	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R591	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R592	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R595	1-216-821-11	METAL CHIP	1K	5%	1/16W	

Ref. No.	Part No.	Description	Remark
R596	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R597	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R954	1-216-138-00	METAL CHIP 3.3 5% 1/8W	
R955	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R956	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R957	1-216-820-11	METAL CHIP 820 5% 1/16W	
R961	1-216-818-11	METAL CHIP 560 5% 1/16W	
R962	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR480E/TR580E)
R964	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	(TR480E/TR580E)
R965	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	(TR480E/TR580E)
R966	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	(TR480E/TR580E)
R967	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	(TR480E/TR580E)
R968	1-216-834-11	METAL CHIP 12K 5% 1/16W	(TR480E/TR580E)
R972	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	(TR480E/TR580E)
R1251	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TR670E/TR675E/TR680E/TR780E/TR880E)
R1252	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR670E/TR675E)
R1259	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR680E/TR780E/TR880E)
R1260	1-216-815-11	METAL CHIP 330 5% 1/16W	(TR680E/TR780E/TR880E)
R1265	1-216-804-11	METAL CHIP 39 5% 1/16W	(TR680E/TR780E/TR880E)
R1266	1-216-803-11	METAL CHIP 33 5% 1/16W	(TR680E/TR780E/TR880E)
R1267	1-216-804-11	METAL CHIP 39 5% 1/16W	(TR680E/TR780E/TR880E)
R1268	1-216-803-11	METAL CHIP 33 5% 1/16W	(TR680E/TR780E/TR880E)
R1270	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR670E/TR675E/TR680E/TR780E/TR880E)
R1275	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR670E/TR675E/TR880E)
R1279	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR680E/TR780E/TR880E)
R1280	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR680E/TR780E/TR880E)
R1285	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR670E/TR675E)
R1286	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR680E/TR780E/TR880E)
R1287	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR680E/TR780E/TR880E)
R1400	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1401	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1403	1-216-845-11	METAL CHIP 100K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R1404	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R1405	1-216-819-11	METAL CHIP 680 5% 1/16W	
R1406	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1407	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R1409	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R1410	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R2001	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR680E/TR780E/TR880E)
R2002	1-216-864-11	METAL CHIP 0 5% 1/16W	
R2003	1-216-864-11	METAL CHIP 0 5% 1/16W	
R2009	1-216-864-11	METAL CHIP 0 5% 1/16W	

< COMPOSITION CIRCUIT BLOCK >

Ref. No.	Part No.	Description	Remark
RB500	1-236-436-11	NETWORK, RES 100K	
RB501	1-236-432-11	NETWORK, RES 47K	
RB503	1-236-432-11	NETWORK, RES 47K	
RB504	1-236-412-11	NETWORK, RES 1.0K	
RB505	1-236-412-11	NETWORK, RES 1.0K	
RB506	1-236-412-11	NETWORK, RES 1.0K	
RB507	1-236-448-11	NETWORK, RES 1.0M	
RB508	1-236-436-11	NETWORK, RES 100K	
RB509	1-236-444-11	NETWORK, RES 470K	
RB510	1-236-412-11	NETWORK, RES 1.0K	
RB512	1-236-412-11	NETWORK, RES 1.0K	
RB514	1-236-907-11	RESISTOR, NETWORK (CHIP TYPE)	
RB515	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)	
RB516	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)	
RB518	1-236-971-11	NETWORK, RES 0	
RB519	1-236-971-11	NETWORK, RES 0	
RB520	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)	
RB521	1-236-412-11	NETWORK, RES 1.0K	
RB522	1-236-448-11	NETWORK, RES 1.0M	
RB523	1-236-432-11	NETWORK, RES 47K	
RB524	1-236-908-11	RESISTOR, NETWORK (CHIP TYPE)	
RB525	1-236-424-11	NETWORK, RES 10K	
RB526	1-236-908-11	RESISTOR, NETWORK (CHIP TYPE)	
RB527	1-236-424-11	NETWORK, RES 10K	
RB528	1-236-424-11	NETWORK, RES 10K	
RB529	1-236-424-11	NETWORK, RES 10K	
RB530	1-236-424-11	NETWORK, RES 10K	
RB531	1-236-424-11	NETWORK, RES 10K	
RB532	1-236-424-11	NETWORK, RES 10K	
RB533	1-236-412-11	NETWORK, RES 1.0K	
RB534	1-236-412-11	NETWORK, RES 1.0K	
RB535	1-236-908-11	RESISTOR, NETWORK (CHIP TYPE)	
RB536	1-236-412-11	NETWORK, RES 1.0K	
RB537	1-236-412-11	NETWORK, RES 1.0K	
RB542	1-236-412-11	NETWORK, RES 1.0K	
RB543	1-236-412-11	NETWORK, RES 1.0K	
RB544	1-236-412-11	NETWORK, RES 1.0K	
RB547	1-236-444-11	NETWORK, RES 470K	

Ref.No.	Part No.	Description	Remark
RB548	1-236-416-11	NETWORK, RES 2.2K	
RB549	1-236-971-11	NETWORK, RES 0	
RB551	1-236-412-11	NETWORK, RES 1.0K	
RB552	1-236-412-11	NETWORK, RES 1.0K	
RB553	1-236-412-11	NETWORK, RES 1.0K	
RB554	1-236-971-11	NETWORK, RES 0	
RB556	1-236-432-11	NETWORK, RES 47K	
RB557	1-236-412-11	NETWORK, RES 1.0K	
		< VIBRATOR >	
X201	1-579-366-11	VIBRATOR, CRYSTAL (4.43MHz)	
X501	1-579-550-11	VIBRATOR, CRYSTAL (32kHz)	
X502	1-760-315-11	VIBRATOR, CRYSTAL (11.719MHz)	
XTL501	1-579-369-21	VIBRATOR (10MHz)	

****

Ref.No.	Part No.	Description	Remark
*	1-651-920-11	ZB-2 BOARD **********	
		< BUZZER >	
BU101	1-529-107-11	BUZZER, PIEZOELECTRIC	
		< CAPACITOR >	
C102	1-164-346-11	CERAMIC CHIP 1uF	16V
C103	1-164-346-11	CERAMIC CHIP 1uF	16V
		< CONNECTOR >	
CN101	1-691-483-21	CONNECTOR, FFC/FPC 4P	
		< BATTERY HOLDER >	
LI101	1-550-104-11	HOLDER, BATTERY	

****

MISCELLANEOUS

****

Ref.No.	Part No.	Description	Remark
6	1-769-662-11	CABLE, FLEXIBLE FLAT 11P	
110	1-473-173-11	SWITCH BLOCK, CONTROL (CK) (TR580E/TR670E/TR675E)	
110	1-473-173-21	SWITCH BLOCK, CONTROL (CK) (TR780E/TR880E)	
110	1-473-173-31	SWITCH BLOCK, CONTROL (CK)(TR680E)	
110	1-473-173-41	SWITCH BLOCK, CONTROL (CK)(TR480E)	
111	1-810-535-11	DISPLAY PANEL, LIQUID CRYSTAL	
156	1-651-894-11	FP-86 FLEXIBLE BOARD (TR480E/TR580E/TR680E/TR780E)	
207	1-656-481-11	FP-292 FLEXIBLE BOARD (TR670E/TR675E/TR880E)	
208	1-656-480-11	FP-291 FLEXIBLE BOARD (TR670E/TR675E/TR880E)	
212	8-753-015-00	LCX005AK-4 (TR670E/TR675E/TR880E)	
251	1-473-132-11	SWITCH BLOCK, CONTROL (FK) (TR480E/TR580E/TR670E/TR675E/TR680E)	
251	1-473-132-21	SWITCH BLOCK, CONTROL (FK)(TR780E)	
251	1-473-132-31	SWITCH BLOCK, CONTROL (FK)(TR880E)	
258	1-691-471-11	CONNECTOR, TRANSLATION 11P	
260	1-651-891-11	FP-52 FLEXIBLE BOARD (TR480E/TR580E/TR670E/TR675E)	
260	1-651-892-11	FP-53 FLEXIBLE BOARD (TR680E/TR780E/TR880E)	
301	1-657-049-11	FP-44 FLEXIBLE BOARD	
308	1-547-716-11	LENS, ZOOM (VCL-5412WA)(TYPE II)	
308	1-547-739-11	LENS, ZOOM (VCL-5412WB)(TYPE III)	
308	8-848-704-01	DEVICE, LENS LSV-140A (TYPE I)	
310	1-547-558-21	FILTER BLOCK, OPTICAL (TR480E)	
310	1-547-735-51	FILTER BLOCK, OPTICAL (EXCEPT TR480E)	
315	1-651-890-11	FP-49 FLEXIBLE BOARD (TR580E/TR670E/TR675E/TR780E/TR880E)	
801	A-7049-521-A	DRUM ASSY, UPPER (DGR-90-R) (TR480E/TR580E/TR670E/TR675E)	
801	A-7049-607-A	DRUM ASSY, UPPER (DGR-94-R) (TR680E/TR780E/TR880E)	
807	1-568-323-11	CONNECTOR, BOARD TO BOARD 4P	
871	1-641-643-12	FP-444 FLEXIBLE BOARD	
872	1-691-254-13	CONNECTOR, TRANSLATION 10P	
874	1-641-639-13	FP-442 FLEXIBLE BOARD	
875	1-645-271-11	FP-575 FLEXIBLE BOARD	
BL801	1-517-325-11	LANP, FLUORESCENT (0.55 INCH) (TR670E/TR675E/TR880E)	
IC691	A-7030-369-A	CCD BLOCK ASSY (055 SERVICE)(CCD IMAGER) (TR480E)	
IC691	A-7030-371-A	CCD BLOCK ASSY (059 SERVICE)(CCD IMAGER) (TR680E)	
IC691	A-7030-495-A	CCD BLOCK ASSY (060 SERVICE)(CCD IMAGER) (TR580E/TR670E/TR675E/TR780E/TR880E)	
J201	1-537-373-51	JACK BOARD ASSY (TR680E/TR780E/TR880E)	
J201	1-537-415-11	TERMINAL BOARD (TR480E/TR580E/TR670E/TR675E)	
M001	1-542-259-11	MICROPHONE, CAP (L-CH)	
M002	1-542-259-11	MICROPHONE, CAP (R-CH)	
M901	A-7048-585-A	DRUM ASSY (DGH-90A-R) (TR480E/TR580E/TR670E/TR675E)	
M901	A-7048-808-A	DRUM ASSY (DGH-0C3A-R) (TR680E/TR780E/TR880E)	
M902	8-835-477-12	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM (LOADING)	
M905	1-698-364-01	MOTOR ASSY, FOCUS	
M906	1-698-363-01	MOTOR ASSY, ZOOM	
M907	3-708-888-01	METER, IG (IRIS)	
M908	3-708-889-01	MOTOR ASSY, FOCUS	
M909	3-708-887-01	MOTOR ASSY, ZOOM	
M910	3-708-898-01	IRIS ASSY	

Be sure to read "Note on the CCD Imager replacement" on page 4-6 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
M911	3-708-897-01	MOTOR ASSY, FOCUS	
M912	3-708-896-01	MOTOR ASSY, ZOOM	
S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
S002	1-572-987-11	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, MP/MP-HG)	
S005	1-570-771-21	SWITCH (C DOWN)	
SE691	1-810-725-31	SENSOR, ANGULAR VELOCITY (TR580E/TR670E/TR675E/TR780E/TR880E)	
SE692	1-810-725-41	SENSOR, ANGULAR VELOCITY (TR580E/TR670E/TR675E/TR780E/TR880E)	
⚠V901	1-452-673-31	CRT ASSY (M01KXX90WB) (TR480E/TR580E/TR680E/TR780E)	
W500	1-651-889-11	FP-48 FLEXIBLE BOARD	
W501	1-642-186-11	FP-437 FLEXIBLE BOARD	
⚠W901	1-540-019-21	SOCKET ASSY, CRT (TR480E/TR580E/TR680E/TR780E)	

****

ACCESSORIES & PACKING MATERIALS

****

Ref. No.	Part No.	Description	Remark
	1-467-574-71	REMOTE COMMANDER (RMT-708)	
	1-573-291-11	CONNECTOR, CONVERSION (TR580E:AEP, UK/TR680E/TR780E)	
	1-575-334-11	CORD, CONNECTION (A/V connecting cable (STEREO), 1.5m)	
	1-575-335-21	CORD, CONNECTION (S VIDEO connecting cable, 1.5m) (TR680E/TR780E/TR880E)	
	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (TR580E:HK)	
	3-712-673-01	SCREWDRIVER (TR480EU/TR580EU/TR670EU/TR675E)	
	3-798-581-11	OPERATION MANUAL (ENGLISH, SPANISH) (TR580E:AEP, UK)	
	3-798-581-41	OPERATION MANUAL (GERMAN, ITALIAN) (TR580E:AEP)	
	3-798-581-51	OPERATION MANUAL (FRENCH, DUTCH) (TR580E:AEP)	
	3-798-581-61	OPERATION MANUAL (SWEDISH, PORTUGUESE) (TR580E:AEP)	
	3-798-581-71	MANUAL, INSTRUCTION (DANISH, FINNISH) (TR580E:AEP)	
	3-798-654-51	MANUAL, INSTRUCTION (ENGLISH, SPANISH) (TR480E/TR480EU/TR580E:E, HK, AUS/TR580EU/TR670E/TR670EU)	
	3-798-654-61	MANUAL, INSTRUCTION (FRENCH, GERMAN) (TR480E:E/TR480EU/TR580E:E, HK/TR580EU/TR670E:E, HK, JE/TR670EU)	
	3-798-654-71	MANUAL, INSTRUCTION (ARABIC) (TR480E:E/TR480EU/TR580E:E/TR580EU/TR670E:E/TR670EU)	
	3-798-654-81	MANUAL, INSTRUCTION (CHINESE) (TR480E:E/TR480EU/TR580E:E, HK/TR580EU/TR670E:E, HK, JE/TR670EU)	
	3-798-655-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH) (TR680E/TR780E)	
	3-798-655-41	MANUAL, INSTRUCTION (GERMAN, ITALIAN) (TR680E:AEP/TR780E:AEP)	
	3-798-655-51	MANUAL, INSTRUCTION (FRENCH, DUTCH) (TR680E:AEP/TR780E:AEP)	
	3-798-655-61	MANUAL, INSTRUCTION (SWEDISH, PORTUGUESE) (TR680E:AEP/TR780E:AEP)	
	3-798-655-71	MANUAL, INSTRUCTION (DANISH, FINNISH) (TR680E:AEP/TR780E:AEP)	
	3-798-887-51	MANUAL, INSTRUCTION (ENGLISH, SPANISH) (TR880E)	
	3-798-887-61	MANUAL, INSTRUCTION (FRENCH, GERMAN) (TR880E:E, HK, JE)	
	3-798-887-71	MANUAL, INSTRUCTION (ARABIC) (TR880E:E)	
	3-798-887-81	MANUAL, INSTRUCTION (CHINESE) (TR880E:E, HK, JE)	
	3-800-199-11	MANUAL, INSTRUCTION (CHINESE) (TR675E)	
	3-947-969-21	BELT (S), SHOULDER	
*	3-959-846-11	INDIVIDUAL CARTON (TR780E)	
*	3-961-062-01	CUSHION (LOWER)	
*	3-961-693-01	CUSHION, ACC	
*	3-963-210-31	INDIVIDUAL CARTON (TR580E:AEP, UK)	
*	3-963-210-41	INDIVIDUAL CARTON (TR580E:E, HK, AUS)	
*	3-963-210-51	INDIVIDUAL CARTON (TR480E)	
	3-963-605-01	COVER, INTERCEPTOR, LIGHT (TR670E/TR675E/TR880E)	
*	3-963-668-01	INDIVIDUAL CARTON (TR580EU)	
*	3-963-668-11	INDIVIDUAL CARTON (TR480EU)	
*	3-963-668-51	INDIVIDUAL CARTON (TR670E)	
*	3-963-668-61	INDIVIDUAL CARTON (TR680E)	
*	3-963-668-71	INDIVIDUAL CARTON (TR670EU)	
*	3-963-668-81	INDIVIDUAL CARTON (TR880E)	
*	3-963-668-91	INDIVIDUAL CARTON (TR675E)	
	3-964-041-01	ADAPTOR, TRIPOD	
	A-7003-535-A	RFU ADAPTOR (RFU-95CH) (TR675E)	
	A-7003-801-A	RFU ADAPTOR (RFU-99E) (TR480EU/TR580EU/TR670EU)	
**	AC-V25A/V25B/V25C	AC POWER ADAPTOR	
***	NP-55	BATTERY PACK	

Note.

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.

*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

****

****

HARDWARE LIST

****

Ref. No.	Part No.	Description
#1	7-627-553-47	PRECISION SCREW +P 2X4 TYPE 3

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SECTION 6
ADJUSTMENTS

Refer to page 4 as for the distinction of the function table of models and classification.

6-1. CAMERA SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 6–28.

1-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

1-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Regulated power supply
- Color monitor
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.3	J-6080-818-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote commander (RM-95-remodeled partly)$^{\text{Note 1}}$	J-6082-053-B	
J-6	Siemens star	J-6080-875-A	For checking the flange back
J-7	Extension cable (42P, 0.8 mm)	J-6082-285-A	For extension between the VC board (CN601) and VS board (CN203)
	Extension cable (34P, 0.8 mm)	J-6082-286-A	For extension between the AU board CN1302 and VS board (CN202)
	Extension cable (12P, 0.8 mm)	J-6082-287-A	For extension between the PJ board (CN1502) and VS board (CN204)
J-8	Extension cable (9P, 0.8 mm)	J-6082-288-A	For extension between the FK board and VS board (CN502)
	Extension cable (18P, 0.8 mm)	J-6082-289-A	For extension between the CK board and VS board (CN503)
J-9	Measuring pin tool for color electronic viewfinder	J-6082-192-A	For adjusting the color electronic viewfinder

Note 1: If the micro processor IC in the adjusting remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

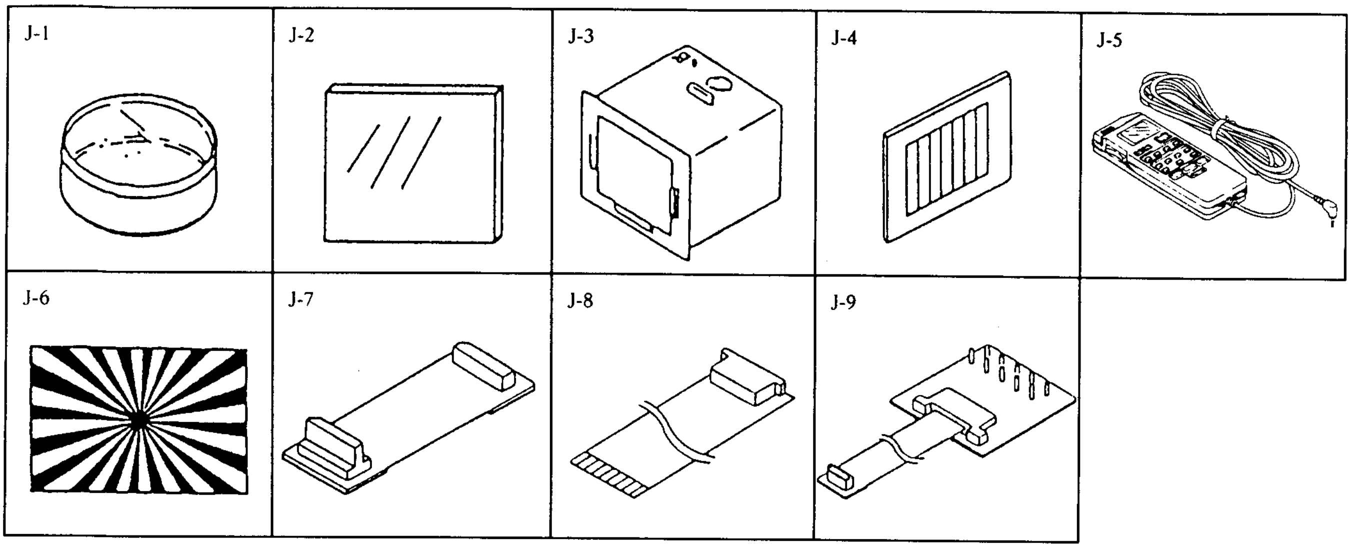

J-1
J-2
J-3
J-4
J-5
J-6
J-7
J-8
J-9

Fig. 6-1-1.

1-1-2. Preparations

Note 1: For further details of how to remove the cabinet and each board, refer to "2. Disassembly".

Note 2: When adjusting only, the lens block and VC board need not be taken apart.

1) Connect the equipments for adjusting as shown in Fig. 6-1-3.
2) The F panel block (MA board) is not required in adjustments. Remove the following connector.
   1. CN1301 of the AU board
3) If remove the cabinet (R) (Power switch, camera function switch and electronic view-finder), set to the camera power supply ON mode (Note 1), and disconnect the following connectors.
   1. CN503 of VS board
   2. CN206 of VS board
   3. CN101 of ZB board

   Be sure to exit this mode after completing the adjustment. (Note 2)
4) Turning OFF the Auto Focus Using the Adjusting Remote Commander
   1. Set data: 01 to page: 6, address: 25.
      (The auto focus will turn OFF. The focus can be adjusted using the focus button on the adjusting remote commander. But the HOLD switch must be set to OFF.)
   2. After completing the adjustment/operation check, set data: 00 to page: 6, address: 25.
5) Turning OFF the STEADY SHOT Function Using the Adjusting Remote Commander (STEADY SHOT model)
   1. Set data: 02 to page: 6, address: 32.
   2. Set data: 01 to page: 6, address: 33.
      (The STEADY SHOT will go OFF.)
   3. After completing the adjustment/operation check, return the data of address: 32 and address: 33 of page: 6 to 00.

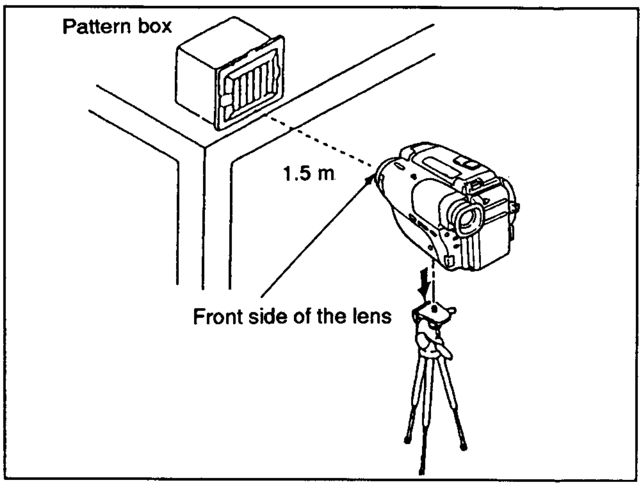


Fig. 6-1-2.

Note 1: Setting the Forced Camera Power Supply ON Mode
1) Set data: 01 to page: 1, address: 00.
2) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.

By carrying out the above, the camera can be operated even if the cabinet (R) has been removed. Be sure to exit the forced camera power ON mode after completing the adjustment.

Note 2: Exiting the Forced Camera Power Supply ON Mode
1) Set data: 01 to page: 1, address: 00.
2) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 1, address: 00.

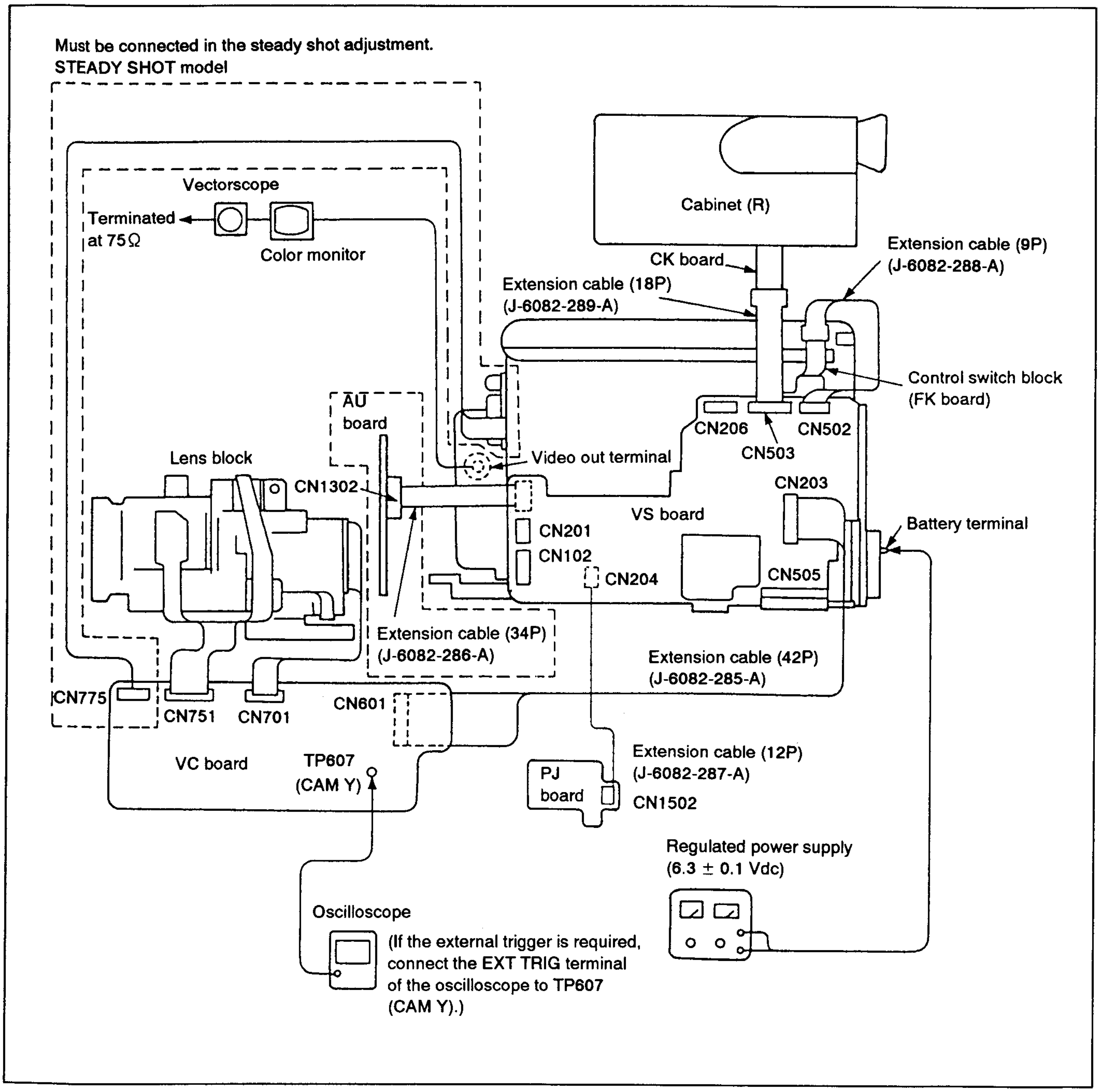

Must be connected in the steady shot adjustment.
STEADY SHOT model
Vectorscope
Terminated at 75Ω
Color monitor
Cabinet (R)
CK board
Extension cable (9P) (J-6082-288-A)
Extension cable (18P) (J-6082-289-A)
Control switch block (FK board)
AU board
CN206
CN502
CN503
Lens block
Video out terminal
CN1302
CN203
VS board
Battery terminal
CN201
CN102
CN204
CN505
Extension cable (34P) (J-6082-286-A)
Extension cable (42P) (J-6082-285-A)
CN775
CN751
CN701
CN601
VC board
TP607 (CAM Y)
Extension cable (12P) (J-6082-287-A)
PJ board
CN1502
Regulated power supply (6.3 ± 0.1 Vdc)
Oscilloscope
(If the external trigger is required, connect the EXT TRIG terminal of the oscilloscope to TP607 (CAM Y).)

Fig. 6-1-3.

1-1-3. Precautions

1. Switch settings

Adjust the switches to the following positions, and adjust without loading the cassette tape, unless specified otherwise.

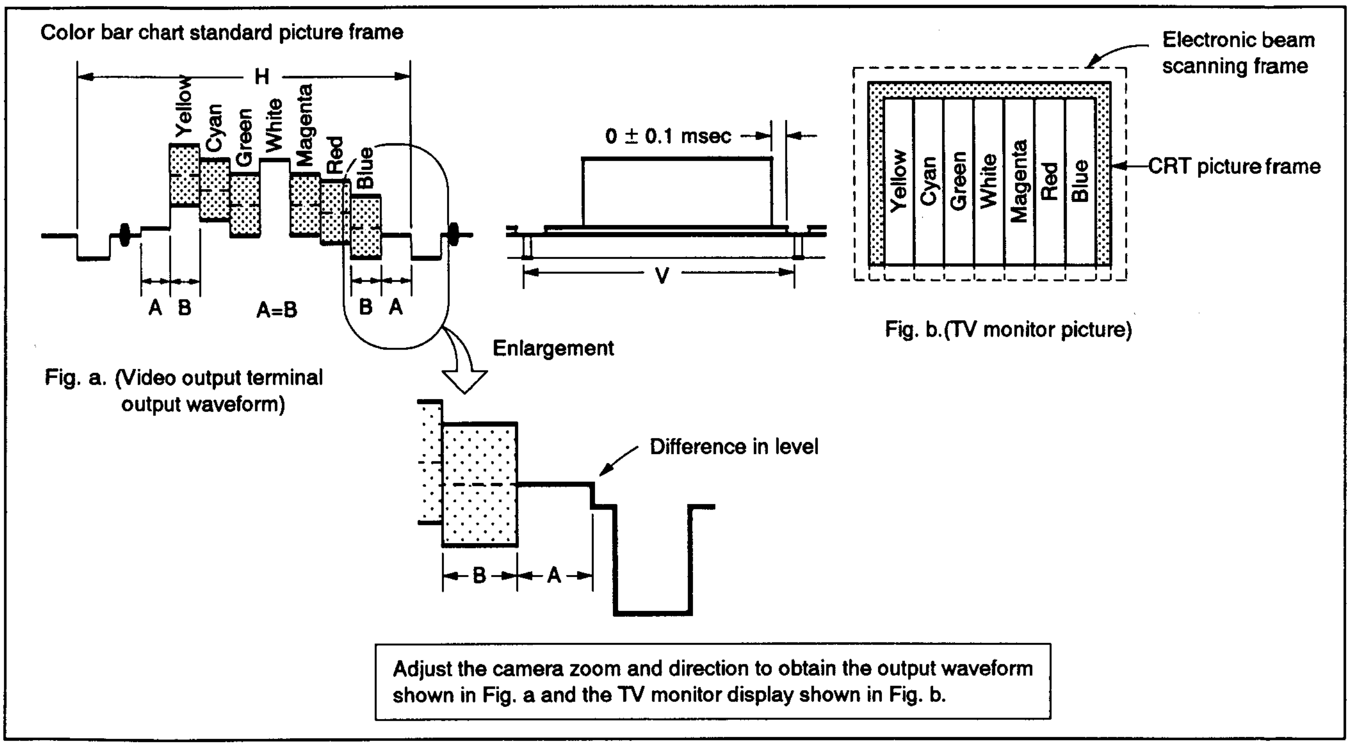
1. Camera/player (VTR) power switch (control switch block (CK)) ································Camera
2. Standby switch (control switch block (FK))··········· Standby
3. PROGRAM AE button (control switch block (CK)) ···································· Off
4. FOCUS switch (control switch block (CK))············Manual
5. BACK LIGHT or EXPOSURE button (control switch block (CK)) ···································· Off
6. STEADY SHOT button (control switch block (CK)) (STEADY SHOT model) ·· Off

2. Adjusting Procedure

Adjust in the given order.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the picture frame as shown in Fig. 6-1-4. if adjustments are performed using the color bar chart. (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and so that the white pattern will be displayed.
   Don't touch the zoom switch.


Color bar chart standard picture frame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
Fig. a. (Video output terminal output waveform)
0 ± 0.1 msec
V
Enlargement
Difference in level
B
A
Electronic beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue
Fig. b.(TV monitor picture)

Adjust the camera zoom and direction to obtain the output waveform shown in Fig. a and the TV monitor display shown in Fig. b.

Fig. 6-1-4.

3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm× 841 mm) paper to a black one, and make the chart shown in Fig. 6-1-5.

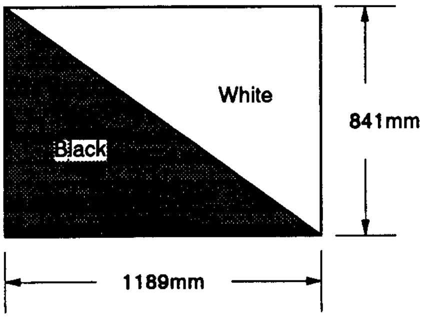

White
Black
841mm
1189mm

Fig. 6-1-5.

Note: Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

1-1-4. Adjusting Remote Commander

Use the adjusting remote commander to change the coefficient of the digital signal processing or the EVR data.

The adjusting remote commander uses the remote commander signal line (LANC) to perform the bidirectional communication with the camera microprocessor. The effect data of the bidirectional communication must be written in the nonvolatile memory.

1. Using the adjusting remote commander

1) Connect the adjusting remote commander to the remote terminal.
2) Adjust the HOLD switch of the adjusting remote commander to "HOLD" (SERVICE position).

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 6-1-6.

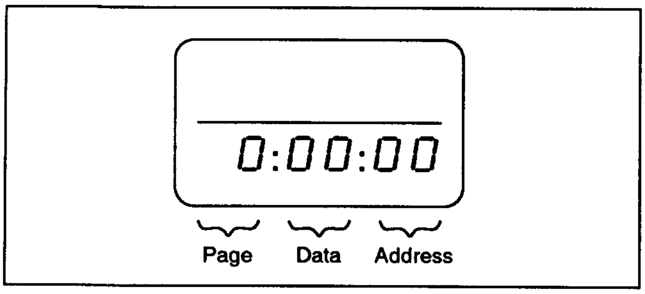


Fig. 6-1-6.

3) Operate the adjusting remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 6-1-1.

   - Changing the address
     The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data (F page) in the nonvolatile memory.
     (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed.)
4) Select page: 6, address: 00, and adjust the data to 01. Page F, and enables the camera section (Addresses 01 to BF of page F) to be adjusted.
5) After completing all adjustments, turn off the main power supply (6.3V) once.

2. Precautions upon using the adjusting remote commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

1-1-5. Page F Address List

Note 1: The data already listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are values just after executing "Page F Data Initialization" and "Page F Data Modification". They are different from the values after executing all adjustments.

Note 3: In some cases, data have been input to the page F addresses C0 to FF. This has no relation to the adjustments.

Note 4: ( ) : TYPE A
No Mark : Others

Note 5:

*1 Address: 00
Data: 81 (TYPE G/TYPE H)
83 (TYPE F)
85 (TYPE B/TYPE C/TYPE D/TYPE E)
89 (TYPE A)

*2 Address: 03
Data: 43 (TYPE A/TYPE F)
47 (TYPE B/TYPE C/TYPE D/TYPE E/TYPE G/TYPE H)

*3 Address: 25
Data: 75 (TYPE F/TYPE G/TYPE H)
A5 (TYPE A)
B5 (TYPE B/TYPE C/TYPE D/TYPE E)

*4 Address: 2E
Data: 15 (TYPE F)
16 (TYPE B/TYPE C/TYPE D/TYPE E)
17 (TYPE A)
18 (TYPE G/TYPE H)

*5 Address: 2F
Data: 24 (TYPE B/TYPE C/TYPE D/TYPE E/TYPE F/TYPE G/TYPE H)
28 (TYPE A)

*6 Address: 32
Data: 49 (TYPE B/TYPE C/TYPE D/TYPE E/TYPE F/TYPE G/TYPE H)
56 (TYPE A)

*7 Address: 50
Data: 12 (TYPE B/TYPE C/TYPE D/TYPE E/TYPE F/TYPE G/TYPE H)
23 (TYPE A)

*8 Address: 77
Data: D8 (TYPE B/TYPE C/TYPE D/TYPE E)
E0 (TYPE F/TYPE G/TYPE H)
E8 (TYPE A)

*9 Address: 8D
Data: 21 (TYPE B/TYPE C/TYPE D/TYPE E/TYPE G/TYPE H)
27 (TYPE A/TYPE F)

*10 Address: 8E
Data: 5A (TYPE B/TYPE C/TYPE D/TYPE E/TYPE G/TYPE H)
6C (TYPE A/TYPE F)

*11 Address: B4
Data: 32 (TYPE B/TYPE E/TYPE F/TYPE G)
F2 (TYPE A/TYPE C/TYPE D/TYPE H)

*12 Address: B6
Data: 00 (TYPE A/TYPE F)
40 (TYPE B/TYPE C/TYPE D/TYPE G/TYPE H)
50 (TYPE E)

*13 Address: BF
Data: 31 (TYPE B/TYPE C/TYPE D/TYPE E/TYPE G/TYPE H)
33 (TYPE F)
37 (TYPE A)

Address	Adjustment data	
	Initial value	Memo column
00 *1	81/83/85/89	81/83/85/89
01	21 (23)	21 (23)
02	00	00
03 *2	43/47	43/47
04	80	
05	80	
06	80	
07	80	
08	2D	
09	26	
0A	FA	
0B	F1	
0C	30	
0D	00	
0E	58	
0F	00	
10	E0	E0
11	8F	
12	6C	
13	36	
14	3C	
15	60	
16	0D	
17	A3	
18	12	
19	8E	
1A	10	
1B	E2	
1C	0C	0C
1D	00	00
1E	80	
1F	80	
20	79	79
21	79	79
22	00	00
23	59	59
24	4C	4C
25 *3	75/A5/B5	75/A5/B5
26	45 (34)	45 (34)
27	3F	3F
28	23	23
29	0E	0E

Table 6-1-2 (1).

Address	Adjustment data	
	Initial value	Memo column
2A	2C (20)	2C (20)
2B	58	
2C	FF	FF
2D	42	42
2E *4	15/16/17/18	15/16/17/18
2F *5	24/28	24/28
30	00	00
31	00	00
32 *6	49/56	49/56
33	68	68
34	02	02
35	35	35
36	02	02
37	00	00
38	83	83
39	6A	6A
3A	50	50
3B	20	20
3C	C0	C0
3D	00	00
3E	00	
3F	00	
40	00	
41	00	
42	00	
43	00	
44	00	
45	00	
46	00	
47	00	
48	00	
49	00	
4A	00	
4B	00	
4C	00	
4D	00	
4E	00	00
4F	20	20
50 *7	12/23	12/23
51	02	02
52	66	66
53	18	18

Table 6-1-2 (2).

Address	Adjustment data	
	Initial value	Memo column
54	6B (66)	6B (66)
55	9F	9F
56	66	66
57	6C (66)	6C (66)
58	5C (59)	5C (59)
59	83	83
5A	67	67
5B	5C	5C
5C	5C	5C
5D	4A	4A
5E	20 (1E)	20 (1E)
5F	5C	5C
60	3C (3A)	3C (3A)
61	33	33
62	0C	0C
63	26	26
64	24	24
65	02	02
66	04	04
67	05	05
68	00	00
69	00	00
6A	00	00
6B	00	00
6C	00	00
6D	00	00
6E	02	02
6F	33	33
70	B0	B0
71	18	18
72	0F	0F
73	0F	0F
74	02	02
75	63	63
76	1B	1B
77 *8	D8/E0/E8	D8/E0/E8
78	A0	A0
79	28	28
7A	0D	0D
7B	50	50
7C	58	58
7D	88	88

Table 6-1-2 (3).

Address	Adjustment data	
	Initial value	Memo column
7E	66	66
7F	46	46
80	8F	8F
81	00	00
82	20	20
83	18	18
84	02	02
85	08	08
86	40	40
87	20	20
88	40	40
89	30	30
8A	50	50
8B	60	60
8C	80	80
8D*9	21/27	21/27
8E*10	5A/6C	5A/6C
8F	00	00
90	00	00
91	77	77
92	00	00
93	FB	FB
94	04	04
95	32	32
96	6B	6B
97	8D	8D
98	A1	A1
99	30	30
9A	30	30
9B	21	21
9C	91	91
9D	72	72
9E	00	00
9F	00	00
A0	00	00
A1	00	00
A2	00	00
A3	00	00
A4	02	02
A5	80	80
A6	00	00
A7	80	80

Table 6-1-2 (4).

Address	Adjustment data	
	Initial value	Memo column
A8	00	00
A9	80	80
AA	00	00
AB	80	80
AC	00	00
AD	00	00
AE	02	02
AF	87	87
B0	39	39
B1	25	25
B2	39	39
B3	25	25
B4*11	32/F2	32/F2
B5	4A	4A
B6*12	00/40/50	00/40/50
B7	20	20
B8	00	00
B9	05	05
BA	00	00
BB	20	20
BC	80	80
BD	00 (80)	00 (80)
BE	6C (72)	6C (72)
BF*13	31/33/37	31/33/37
C0 to EF	Not used	Not used
F0		
F1		
F2		
F3		
F4		
F5		
F6		
F7		
F8		
F9		
FA		
FB		
FC		
FD		
FE		
FF		

Table 6-1-2 (5).

1-1-6. Data Processing

The calculation of the DDS display and the adjusting remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 6-1-3. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

②

The lower digits of the hexadecimal notation The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	80	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B (b)	176	177	178	179	180	180	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (b d).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 6-1-3.

1-2. CAMERA SYSTEM ADJUSTMENT

1. Power Supply Voltage Check (DD board)

Subject	Option
Measuring instrument	Digital voltmeter
D5V check	
Measurement point	Pins ㉙ of CN901
Specified value	4.9 ± 0.1 Vdc
D3.6V check	
Measurement point	Pins ㉑ and ㉒ of CN901
Specified value	3.6 ± 0.1 Vdc
CAM 5V check	
Measurement point	Pins ㉕ and ㉖ of CN901
Specified value	4.85 ± 0.1 Vdc
CAM 15V check	
Measurement point	Pin ㉗ of CN901
Specified value	15 ± 0.3 Vdc
CAM -9V check	
Measurement point	Pin ㉛ of CN901
Specified value	$-8.5^{+0.25}_{-0.4}$ Vdc

Checking method:

1) Check that each power supply voltage satisfies the specified value.

2. Page F Data Initialization

Note: It is necessary to perform all adjustments of the camera section from the beginning again if the data of page F has been initialized.

Initializing method:

1) Set data: 01 to page: 6, address: 00.
2) Check that the data of page: 6, address: 11 is 00.
3) Set data: 2F to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Check that the data of page: 6, address: 11 is 01.
5) Set data: 00 to page: 6, address: 01. and press the PAUSE button of the adjusting remote commander.
6) After performing "Page F data modification", perform all the adjustments of the camera section (page F).

3. Page F Data Modification 1

The data (initial data) that is automatically written on page F after the initialization of the page F data will differ according to some camera micro processor versions. Change the data by manual input, and arrange it.

Note 1: When changing the data, to write the data to the non-volatile memory, press the PAUSE button of the adjusting remote commander every time the new data is set.

Note 2: When changing address: 00, set the data of page: 6, address: 00 to 80.

TYPE B/TYPE C/
TYPE D/TYPE E

Address	Data
2F	24
32	49
77	D8
8D	21
8E	5A
B4	[F2]
B6	(50)
BE	6C
BF	31

[ ]: TYPE C/TYPE D
( ): TYPE E

TYPE A

Address	Data
01	23
03	43
25	A5
26	34
2A	20
2E	17
2F	28
32	56
50	23
54	66
57	66
58	59
5E	1E
60	3A
77	E8
8D	27
8E	6C
B4	F2
B6	00
BD	80
BE	72
BF	37

TYPE F

Address	Data
03	43
25	75
2E	15
2F	24
32	49
50	12
77	E0
8D	27
8E	6C
B6	00
BE	6C
BF	33

TYPE G/TYPE H

Address	Data
25	75
2E	18
2F	24
32	49
8D	21
8E	5A
B4	32 (F2)
BE	6C
BF	31

( ): TYPE H

[Distinguishing the Camera Micro Processor (IC602) Versions]

Each version can be distinguished by looking at the part name of the camera micro processor or the data of page: 6, address: 10.

Version	Part Name	Page: 6 Address: 10
Ver.2.0	SC424611	20
Ver.3.0	SC424618	30

[Distinguishing the Steady Shot Control Micro Processor (IC778) Versions] (STEADY SHOT model)

Each version can be distinguished by looking at the part name of the steady shot control micro processor or the data of page: 6, address: 30.

Version	Part Name	Page: 6 Address: 30
Ver.1.0	CXP81120-003R	10

4. Page F Data Modification 2

1) Set data: 01 to page: 6, address: 00.
2) Set data: 16 to page: 6, address: 02
3) Read the Data of page A _ _ _ _
↑
X
4) Image Device of 760 model

	Page	Address	Data
When X=9	F	2B	50
When X=A or B	F	2B	58

5) Image Device of 510 model

	Page	Address	Data
When X=9	F	2B	58
	F	34	00
When X=B	F	2B	50
	F	34	02

5. 28 MHz Original Oscillation Adjustment (VC board)

Adjust the 28 MHz oscillation of the synchronization clock.
If the oscillation is not 28 MHz, the period will be inaccurate or the image will not be in color.

Subject	Not required
Measurement Point	TP709 (CL)
Measuring Instrument	Frequency counter
Adjusting Element	CT701
Specified Value	14187500 ± 70 Hz

Adjusting method:

1) Use CT701 to adjust the oscillation frequency to 14187500 ± 70 Hz.

6. V SUB Adjustment

Set the CCD imager V SUB voltage to the voltage specified for the imager.

Subject	Not required
Adjustment Page	F
Adjustment Address	04

Adjusting Method:

1) Read the V SUB voltage code of the CCD imager.
   Obtain the corresponding V SUB data from the following table.
2) Set data: 01 to page: 6, address: 00.
3) Set the V SUB data to page: F, address: 04.
4) Press the PAUSE button of the adjusting remote commander.

V SUB			V SUB		
Voltage Code	Data	Voltagee (Vdc) *1	Voltage Code	Data	Voltagee (Vdc) *1
e	71	9.0	q	AD	14.0
f	77	9.5	r	B3	14.5
g	7D	10.0	s	B9	15.0
h	83	10.5	t	BF	15.5
j	89	11.0	u	C5	16.0
k	8F	11.5	v	CB	16.5
l	95	12.0	w	D1	17.0
m	9B	12.5	x	D7	17.5
n	A1	13.0	y	DD	18.0
p	A7	13.5	z	E3	18.5

*1: The V SUB voltages (TP703) given are reference values.

7. VRG Adjustment

Set the CCD imager V RG voltage to the voltage specified for the imager.

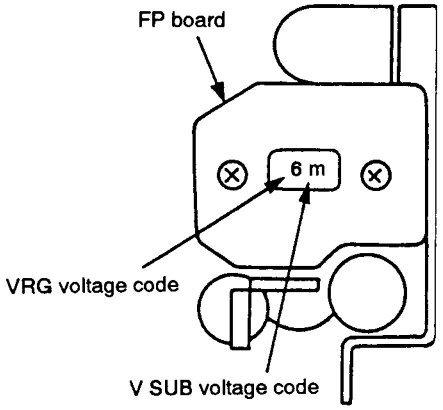
Subject	Not required
Adjustment Page	F
Adjustment Address	05

Adjusting Method:

1) Read the VRG voltage code of the CCD imager.
   Obtain the corresponding VRG data from the following table.
2) Set data: 01 to page: 6, address: 00.
3) Set the VRG data to page: F, address: 05.
4) Press the PAUSE button of the adjusting remote commander.

VRG		
Voltage Code	Data	Voltage (Vdc) *2
1	34	1.0
2	4E	1.5
3	69	2.0
4	83	2.5
5	9E	3.0
6	B8	3.5
7	D3	4.0

*2: The VRG voltages (TP707) given are reference values.



(Example) When "6m" is displayed:
The V SUB voltage code is "m" and therefore the V SUB data will be "9B".
The VRG voltage code is "6" and therefore the VRG data will be "B8".

Fig. 6-1-7.

8. Flange Back Adjustment

The flange back adjustment for the inner focus lens is performed automatically.

Subject	Chart for flange back adjustment (2000 ± 5 mm from the front side of the lens Luminance: 300 ± 50 lux)
Measurement Point	Check the operations on the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	16, 17, 18, 19, 1A, 1B

Adjusting method:

1) Check that the flange back adjustment chart center and the exposure display center coincide at both zoom lens TELE end and WIDE end.
2) Set data: 01 to page: 6, address: 00.
3) Input the following data for STEADY SHOT model
   Set data: 02 to page: 6, address: 32
   Set data: 01 to page: 6, address: 33
4) Check that the data of page: 6, address: 21 is 00.
5) Check that the page: F, address: 16 to 1B data is at the initial value. (Refer to Table 6-1-2. "Page F address list")
6) Set data: 13 to page: 6, address: 01 and press the PAUSE button of the adjusting remote commander.
7) Set data: 15 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
   (The adjustment data is automatically input to page: F, addresses: 16 to 1B.)
8) Check that the data of page: 6, address: 21 is 01.
   (Display indicating flange back adjustment completion)

Processing after completing adjustments

1) Turn off the main power supply (6.3V).

9. Flange Back Check

Subject	Siemens star (2m from the front of the lens)
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Specified Value	Focused at the TELE end and WIDE end.

Checking method:

1) Place the Siemens star 2m from the front of the lens.
2) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appears on the image.
3) Shoot the siemens star with the zoom TELE end.
4) Turn ON the auto focus.
5) When the lens is focused, turn OFF the auto focus. (Note 2)
6) Shoot the siemens star with the zoom WIDE end.
7) Check that the lens is focused.

Note 1: Input the following data for STEADY SHOT model.
   1) Set data: 02 to page: 6, address: 32.
   2) Set data: 01 to page: 6, address: 33.

Note 2: When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on page A of the adjusting remote commander.
   1) Set data: 0C to page: 6, address: 02.
   2) Page A shows the state of the focus.
   A : 00 : XX
   → (Odd: Focused
   Even: Unfocused)

Processing after compleating adjustments

1) Set data: 00 to page: 6, address: 02.

For STEADY SHOT model

2) Set data: 00 to page: 6, address: 32.
3) Set data: 00 to page: 6, address: 33.

10. HALL Adjustment

To eliminate the differences in the outputs of the hall element attached to the iris for detecting the position of the lens iris, adjust the hall AMP gain and hall offset.

Subject	Not required
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	06, 07
Specified Value	33 to 37 during IRIS OPEN B4 to B8 during IRIS CLOSE

Adjusting method:

1) Set data: 01 to page: 6, address: 00.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 03 to page: 6, address: 02.
5) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 80 to page: F, address: 07, and press the PAUSE button of the adjusting remote commander.
7) Set data: 40 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
8) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and this data is named W_2.
9) Set data: 30 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
10) Read the DDS display data, and this data is named W_1.
11) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
12) Read the DDS display data, and this data is named K_1.
13) Set data: 40 to page: F, address: 06, and press the PAUSE button.
14) Read the DDS display data, and this data is named K_2.
15) Convert W_1, W_2, K_1, K_2 to decimal notation, and obtain W_1', W_2', K_1', K_2'. (Refer to Table 6-1-3. "Hexadecimal notation-decimal notation conversion table".)
16) Calculate X_1' using the following equations (decimal notation calculation).

    $A' = W_2' + K_1' - W_1' - K_2'$ ··························Equation 1

    $B' = W_1' - K_1'$ ···Equation 2

    $X_1' = \dfrac{2080 + (48 \times A') - (16 \times B')}{A'}$ ················Equation 3

17) Convert X_1' to hexadecimal notation, and obtain X_1. (Round off to one decimal place)
18) Set data: X_1 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
19) Change the data of page: F, address: 07, and adjust the DDS display data to "35".
20) Press the PAUSE button of the adjusting remote commander.
21) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
22) Read the DDS display data, and this data is named W_0. If W_0 lies within the "B4" to "B8" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.
23) Convert W_0 to hexadecimal notation, and obtain W_0'.
24) Calculate X_2' using the following equations (decimal notation calculation).

    $C' = W_0' - B' - 52$ ···································Equation 4

    $X_2' = \dfrac{(130 - B') \times (X_1' - 48) + 48 \times C'}{C'}$ ············Equation 5

    (X_1' and B' are values obtained from equations 2 and3)

25) Convert X_2' to hexadecimal notation and obtain X_2. (Round off to one decimal place)
26) Set data X_2 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
27) Change the data of page: F, address: 07, and adjust the DDS display data to "B6".
28) Press the PAUSE button of the adjusting remote commander.
29) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
30) Check that the DDS display data lies within the "33" to "37" range.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 1, address: 00.

11. Picture Frame Setting

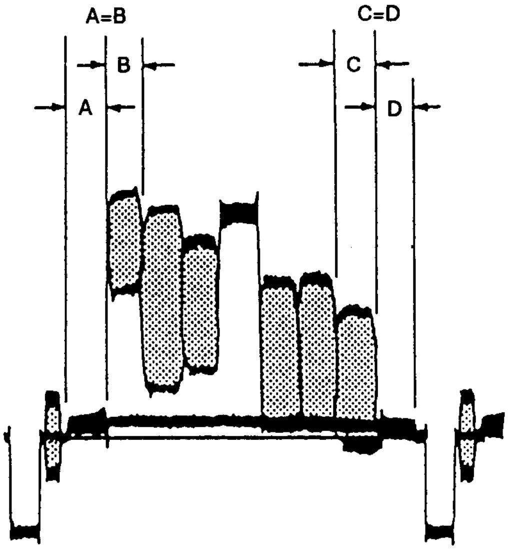
Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor.
Specified Value	A=B, C=D, t=0 ± 0.1 msec

Setting method:

1) Turn the auto focus off.
2) Adjust the focus.
3) Adjust the zoom and the camera direction, and set to the specified position.
4) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "color bar chart standard picture frame".

Check on the oscilloscope

1. horizontal period



2. Vertical period

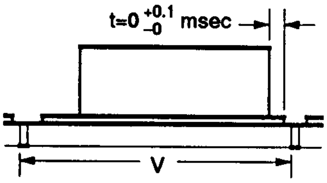


Fig. 6-1-8.

Check on the TV monitor

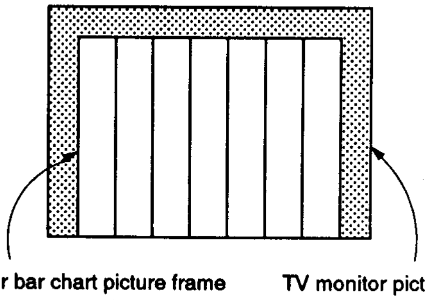


Fig. 6-1-9.

12. Color Reproduction Adjustment

Adjust the color separation matrix coefficient so that the proper color reproduction is produced.

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	08, 09, 0A, 0B
Specified Value	All color luminance points should settle within each color reproduction frame.

Adjusting method:

1) Set data: 01 to page: 6, address: 00.
2) Set data: 00 to page: 6, address: 03.
3) Set data: F1 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
4) Set data: F6 to page: F, address: 63.
5) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
6) Change the data of addresses 08, 09, 0A and 0B of page: F, and settle each color luminance point in each color reproduction frame.

   Note 1: Be sure to press the PAUSE button of the adjusting remote commander before changing the addresses.

   If not, the new data will not be written to the memory.
7) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set data: E0 to page: F, address: 10 and press the PAUSE button of the adjusting remote commander.
2) Set data: 26 to page: F, address: 63.
3) Set data: 10 to page: 6, address: 03.

For IMAGE DEVICE of 510

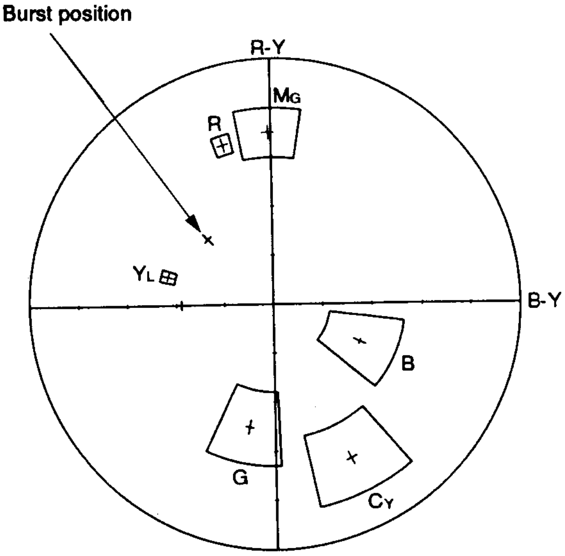


Fig. 6-1-10.

For IMAGE DEVICE of 760

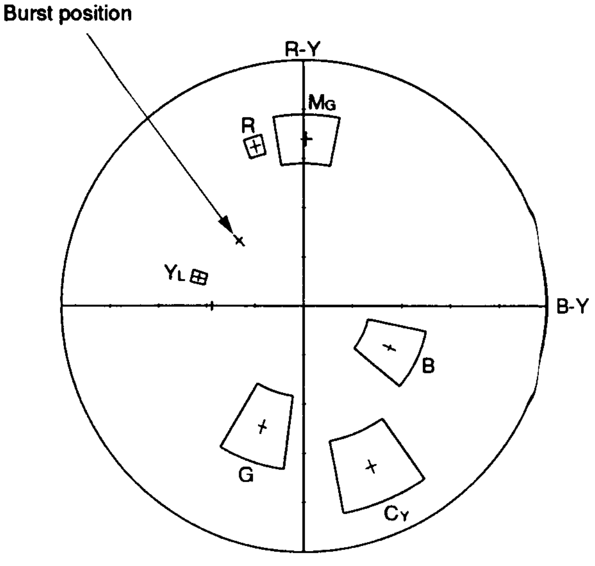


Fig. 6-1-11.

13. IRIS IN/OUT Adjustment (VC board)

For the unit to judge if the white balance is indoors or outdoors in auto white balance operations, measure the light level and write it in the EEPROM.

If the level is not correct, the white balance will not be accurate.

Subject	White pattern
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	13, 14

Adjusting method:

1) Set data: 01 to page: 6, address: 00.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 0E to page: 6, address: 02.
5) Set data: 0B to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Read the DDS display data (Note 1), and take the upper two digits as D_1 and the lower two as D_2.
7) Convert D_1 to a decimal number and obtain D_1'. (Refer to Table 6-1-3. "Hexadecimal Notation-Decimal Notation Conversion Table".)
8) Calculate D_3' using the following equations. (Equations 1 and 2 are for decimal notation calculation)

   When $D_2 \geqq$ D0

   $D_3'=D_1'-21$ ··································Equation 1

   When $D_2 <$ D0

   $D_3'=D_1'-22$ ··································Equation 2
9) Convert D_3' to a hexadecimal number and obtain D_3.
10) Set D_3 to page: F, address: 13, and press the PAUSE button of the adjusting remote commander.
11) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
12) Read the DDS display data (Note 1), and take the upper two digits as D_4 and the lower two as D_5.
13) Convert D_4 to a decimal number and obtain D_4'. (Refer to Table 6-1-3. "Hexadecimal Notation-Decimal Notation Conversion Table".)
14) Calculate D_6' using the following equations. (Equations 3 and 4 are for decimal notation calculation)

   When $D_5 \geqq$ F0

   $D_6'=D_4'-13$ ······································Equation 3

   When $D_5 <$ F0

   $D_6'=D_4'-14$ ······································Equation 4
15) Convert D_6' to a hexadecimal number and obtain D_6.
16) Set D_6 to page: F, address: 14, and press the PAUSE button of the adjusting remote commander.

Note 1: The right four digits of the display data at the right bottom side of the EVF and monitor TV is the LIGHT LEVEL data. If the lower digits change severely and cannot be read, record it on a tape once, play it back by frame feeding, and obtain the average value.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 1, address: 00.
3) Set data: 00 to page: 6, address: 00, and press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 6, address: 02.

14. MAX GAIN Adjustment (VC board)

Correct the differences in the minimum illuminance.

If the illuminance is not consistent, the image level required for taking subjects in low illuminance will not be produced (dark).

Subject	White pattern standard picture frame
Measurement Point	TP607 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	15
Specified Value	A=390 m (Image Device of 760 and Steady Shot model) A=460 m (Image Device of 760 model) A=610 m (Image Device of 510 model)

Adjusting method:

1) Set data: 01 to page: 6, address: 00.
2) Set data: 02 to page: F, address: 2D.
3) Set data: 19 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Change the data of page: F, address: 15, and adjust so that the video out signal level (A) becomes the specified value.
   Note: The data of address: 15 should be 70 to FF.
5) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
2) Return the data page: F address: 2D to an initialized value.

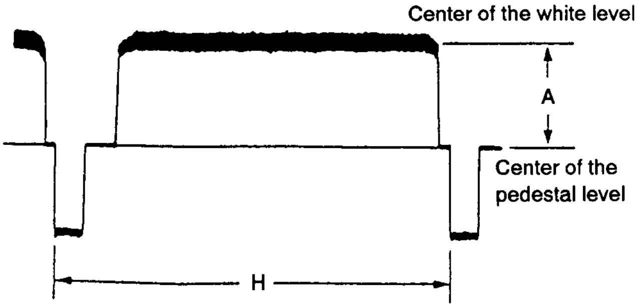


Fig. 6-1-12.

15. Auto White Balance Standard Data Input

Subject	White pattern standard picture frame
Adjustment Page	F
Adjustment Address	0C, 0D, 0E, 0F

Adjusting method:

1) Turn the power of the unit OFF/ON.
2) Set data: 01 to page: 6, address: 00.
3) Check that the data of page: 6, address: 11 is 00.
4) Wait for 2 seconds.
5) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
   (When the standard data is taken in, the data will be automatically input to addresses 0C to 0F of page F.)
7) Check that the data of page: 6, address: 11 is 01.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.

16. Auto White Balance Adjustment

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction.
Measurement Point	Check with the DDS display on the EVF or TV monitor
Measuring Intrument	
Adjustment Page	F
Adjustment Address	11, 12
Specified Value	R ratio: 2B40 to 2BC0 (Image Device of 760) : 2A40 to 2AC0 (Image Device of 510) B ratio: 5E00 to 5F00

Adjusting method:

1) Place the C14 filter for color temperature correction on the lens.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 01 to page: 6, address: 00.
5) Set data: D0 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
6) Set data: 04 to page: 6, address: 02.
7) Change the data of page: F, address: 11, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to the R ratio specified value.
8) Press the PAUSE button of the adjusting remote commander.
9) Set data: 05 to page: 6, address: 02.
10) Change the data of page: F, address: 12, and adjust the average value of the DDS display data to the B ratio specified value.
11) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set data: E0 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 6, address: 02.
4) Set data: 00 to page: 1, address: 00.

17. White Balance Check

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 7-1-13. A to C

Checking method:

1) Check that the lens is not covered with either filter.
2) Set data: 01 to page: 6, address: 00.
3) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Check that the center of the white luminance point is within the circle shown in Fig. 6-1-13.A.
5) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 23 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
7) Place the C14 filter on the lens.
8) Check that the center of the white luminance point settles in the circle shown in Fig. 6-1-13. B.
9) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
10) Check that the center of the white luminance point settles in the circle shown in Fig. 6-1-13. C.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 6, address: 00, and press the PAUSE button.

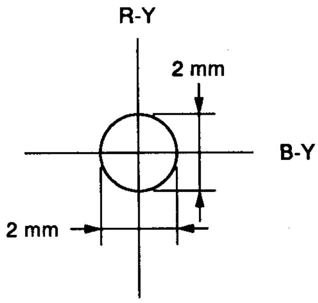

R-Y
2 mm
B-Y
2 mm

Fig. 6-1-13. A

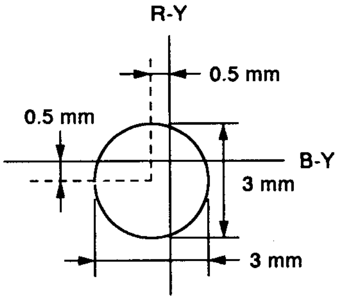

R-Y
0.5 mm
0.5 mm
B-Y
3 mm
3 mm

Fig. 6-1-13. B

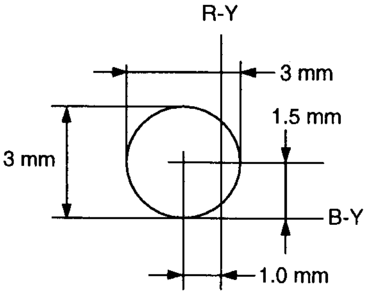

R-Y
3 mm
1.5 mm
3 mm
B-Y
1.0 mm

Fig. 6-1-13. C

18. VIDEO OUT Level Check

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal (Terminated at 75 Ω)
Measuring Instrument	Oscilloscope
Specified Value	Y level=660 ± 40 mV SYNC level=300 ± 20 mV BURST level=300 ± 20 mV

Checking method:

1) Check that the Y level, SYNC level and BURST level satisfy the specified values.

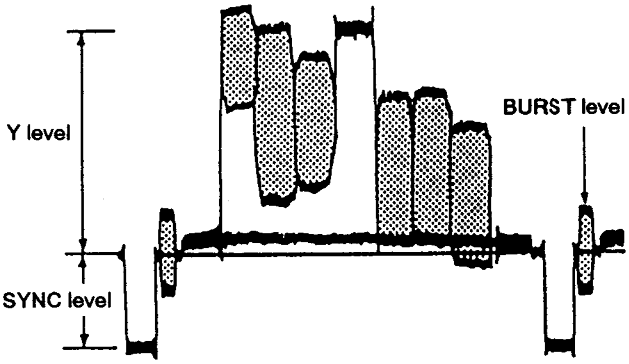


Fig. 6-1-14.

1-3. COLOR ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

Note 1: The backlight (fluorescent tube) is driven by a 800 Vp-p, 16 kHz AC power supply.
Therefore, be careful not to touch the backlight holder as you will receive an electric shock.

Note 2: When replacing the LCD unit, ensure there will be no damages by static electricity.

[Adjusting connector]

Some measuring points for adjusting the view-finder are concentrated at CN902 of the VF-73 board. Connect the measuring equipments via the measuring pin tool. The following table lists the pin numbers and signal names of CN902.

Pin No.	Signal Name	Pin No.	Signal Name
1	LC COM	2	EVF GND
3	G OUT	4	13.5V
5	NC	6	12V
7	R OUT	8	B OUT
9	NC	10	PCO

Table 6-1-4.

J-1: Measuring pin tool Parts Code: J-6082-192-A

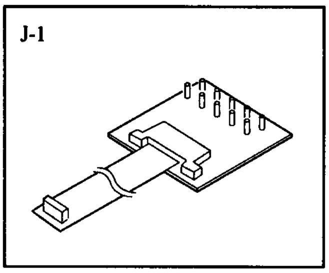


Fig. 6-1-15.

[Power Supply Voltage]

Adjust the power supply voltage for the battery pin so that Pin ⑦ (EVF UNREG) of CN851 of the VF-72 board becomes 6.0 ± 0.1 Vdc.

[Connecting the Equipment]

Refer to 6–33 and 6–34 of the service manual.

[Video Input Signal for Adjusting]

If the signal column specifies "Color bar signal whose chroma signal and burst signal are turned off", input a color bar signal whose chroma signal and burst signal have been turned off to the video input pin as the video input signal for adjusting. Check that the signal level of Pin ⑪ of CN851 of the VF-72 board is 1.0 ± 0.12 Vp-p before adjusting.

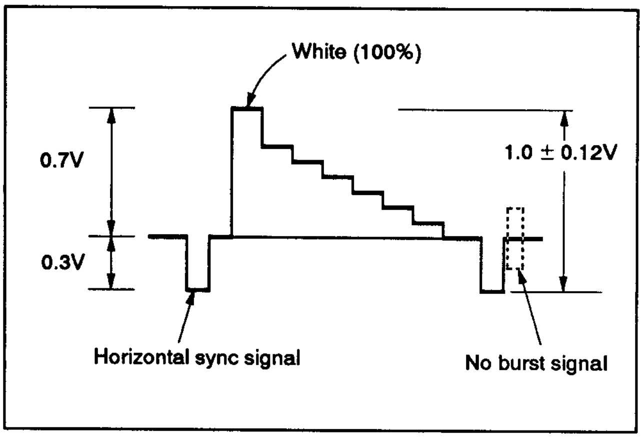


Fig. 6-1-16. Color bar signal whose chroma signal and burst signals are turned off

1. Current Consumption Adjustment (VF-72 board)

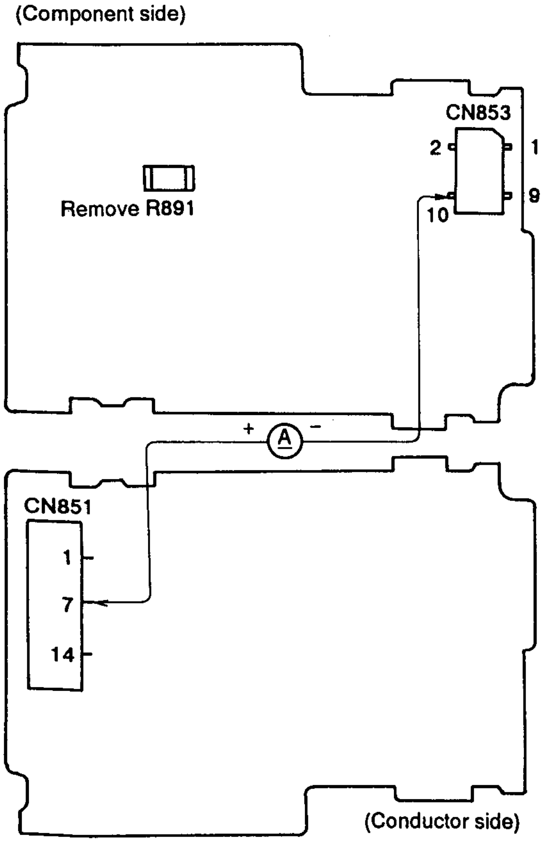
Adjust the luminance and color temperature of the back light.
If these are not correct, the image will be brighter or darker than normal.

Mode	Stop
Signal	Color bar signal whose chroma signal and burst signal are turned off
Measurement Point	Remove L851 and measure + : Pin ⑦ of CN851 − : ⊕ pin of C861
Measuring Instrument	Ammeter
Adjustment Page	D
Adjustment Address	B7
Specified Value	63 ± 3 mA

Note 1: Wait for 30 secs. after the power supply has been turned on before this adjustment.

Note 2: After adjusting, connect L851.

Adjusting method:
1) Check that the voltage of Pin ⑦ of CN851 is 6.0 ± 0.1 Vdc.
2) Set data: 01 to page: 1, address: 00.
3) Change the data of page: D, address: B7, and adjust the current consumption to 63 ± 3 mA.
4) Press the PAUSE button of the adjusting remote commander.



VF-72 BOARD

Fig. 6-1-17.

2. Power Supply Voltage Check (VF-73 board)

Mode	Record
Measuring Instrument	Digital voltmeter
13.5V check	
Measurement Point	Pin ⑭ of CN901
Specified Value	13.5 ± 0.3 Vdc
12.0V check	
Measurement Point	Pin ⑬ of CN901
Specified Value	12.0 ± 0.3 Vdc

3. EVR Initial Data Input

Mode	STOP
Signal	Arbitary
Adjustment Page	D

Adjusting method:
1) Set data: 01 to page: 1, address: 00.
2) Select page D, and input the data in the following table.
   Note: To write in the nonvolatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time the data is set.

Address	Data
B0	A0
B1	75
B2	50
B3	7A
B4	6A
B5	70
B6	90
B7	35
B8	7A
B9	7A
BA	70
BB	F0

4. VCO Adjustment (VF-73 board)

Set the free running frequency of the VCO.
If it is not correct, the image will waver.

Mode	Record
Signal	Color bar
Measurement Point	Pin ⑩ of CN902 (PCO)
Measuring Instrument	Oscilloscope (DC range)
Adjustment Page	D
Adjustment Address	B6
Specified Value	A=2.8 ± 0.1V

Adjusting method:

1) Check tha GND level of the oscilloscope.
2) Set data: 01 to page: 1, address: 00.
3) Change the data of page: D, address: B6, and adjust the PCO voltage (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.

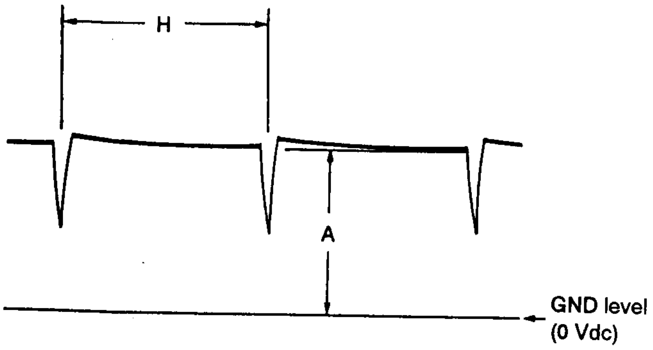
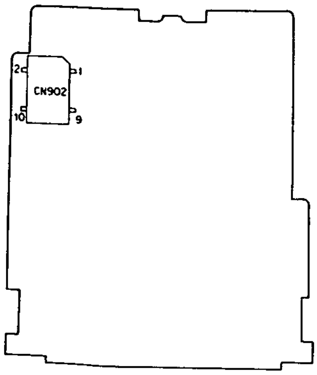
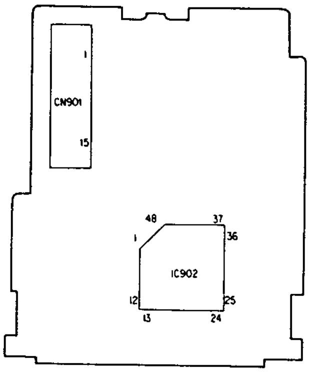


Fig. 6-1-18.

VF-73 BOARD
(COMPONENT SIDE)



VF-73 BOARD
(CONDUCTOR SIDE)



5. Bright Adjustment (VF-73 board)

Adjust to the proper LCD panel driving video signal level.
If it is not correct, the image will be saturated (whitish) or blackish.

Mode	Record
Signal	No signal
Measurement Point	Pin ③ of CN902 (G OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	B0
Specified Value	A=7.0 ± 0.1V

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: B0, and adjust the potential difference (A) between the reversed waveform pedestal and the non reversed waveform pedestal to the specified value.
3) Press the PAUSE button of the adjusting remote commander.

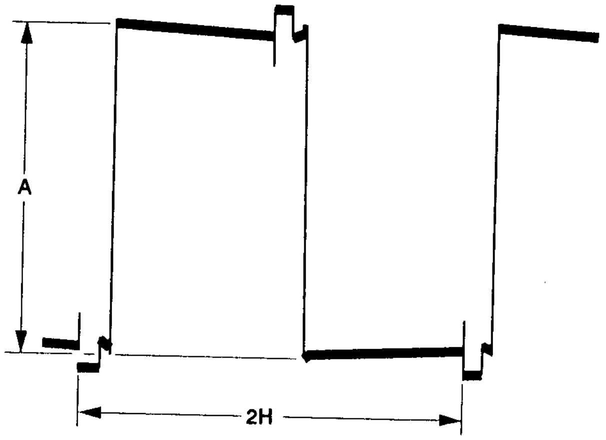


Fig. 6-1-19.

6. Contrast Adjustment (VF-73 board)

Set the contrast of the image.

If the contrast is not correct, the image will be blur (whitish) or saturated.

Mode	Record
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	Pin ③ of CN902 (G OUT)
Measuring Instrument	Oscilloscope External trigger: Pin ㉞ of IC902 (FRP)
Adjustment Page	D
Adjustment Address	B5
Specified Value	A=2.0 ± 0.1V

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: B5, and adjust the voltage (A) between the white (100%) and pedestal to the specified value.
3) Press the PAUSE button of the adjusting remote commander.

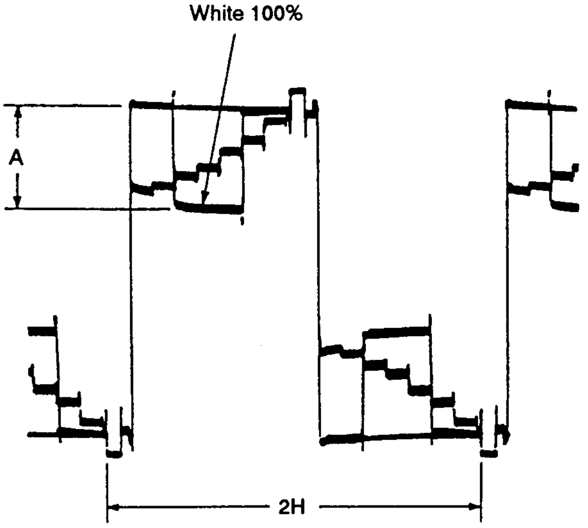


Fig. 6-1-20.

7. SUB BRIGHT R Preset Adjustment (1) (VF-73 board)

White balance rough adjustment (1)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑦ of CN902 (R OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	B3
Specified Value	A=7.0 ± 0.1V

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: B3 and adjust the potential difference (A) between the reversed waveform pedestal and the non reversed waveform pedestal to the specified value.
3) Press the PAUSE button of the adjusting remote commander.

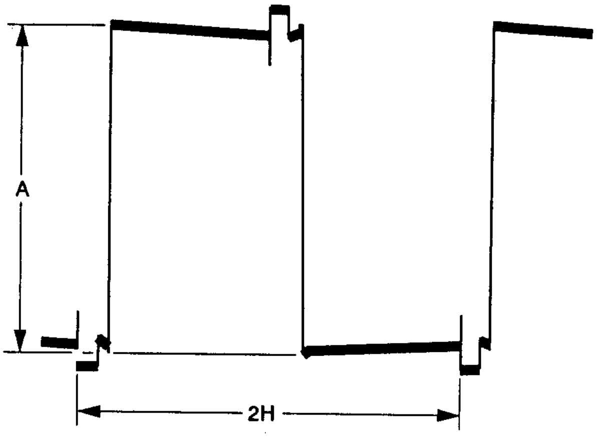


Fig. 6-1-21.

8. SUB BRIGHT B Preset Adjustment (2) (VF-67 board)

White balance rough adjustment (2)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑧ of CN902 (B OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	B4
Specified Value	A=7.1 ± 0.1V

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: B4 and adjust the potential difference (A) between the reversed waveform pedestal and the non reversed waveform pedestal to the specified value.
3) Press the PAUSE button of the adjusting remote commander.

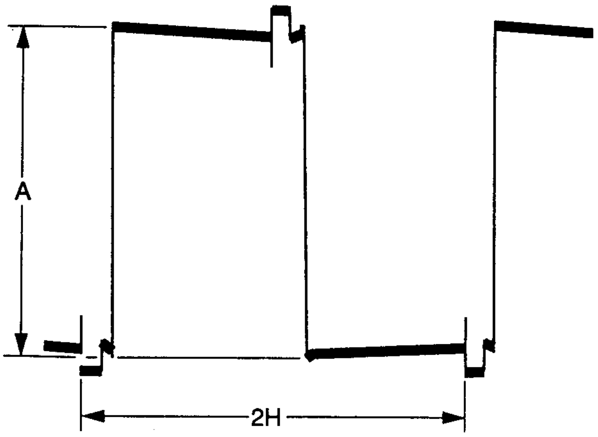


Fig. 6-1-22.

9. White Balance Adjustment

Adjust to the proper white balance level.

If it is not correct, the color reproducibility of the LCD panel will be poor.

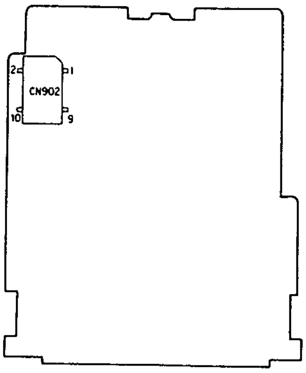
Mode	Record
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	Check on the LCD display
Measuring Instrument	
Adjustment Page	D
Adjustment Address	B3, B4
Specified Value	The display should not be colored

Note: Wait for more than 1 minute after the power supply has been turned on before this adjustment.

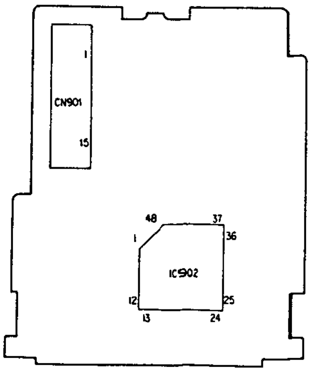
Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Check that the LCD display is not colored. If it is, change the data of address: B3 and address: B4 of page: D, and adjustment the display is not colored.
3) Press the PAUSE button of the adjusting remote commander.

VF-73 BOARD
(COMPONENT SIDE)



VF-73 BOARD
(CONDUCTOR SIDE)



10. Burst Creaning Adjustment

Mode	Record
Signal	Color bar
Measurement Point	Pin ⑧ of CN902 (B OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	B2
Specified Value	(The minimum value of flicker)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: B2 and the value of flicker (A) should be a minimum.
3) Press the PAUSE button of the adjusting remote commander.

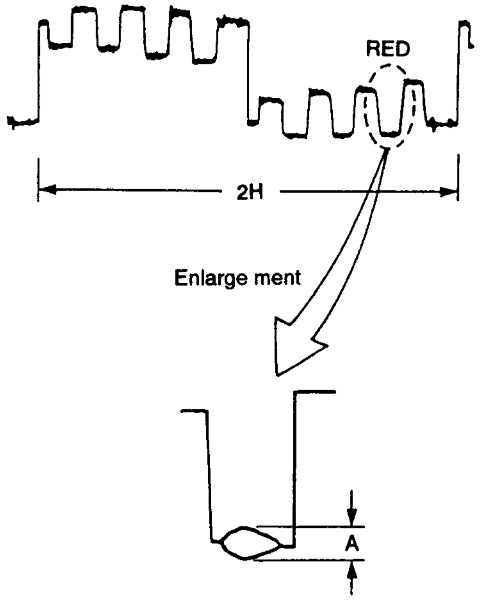
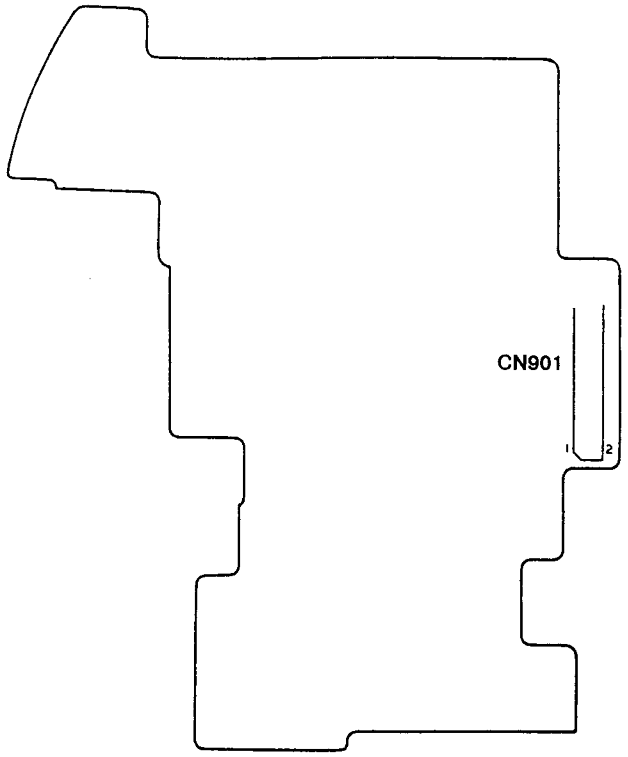

RED
2H
Enlarge ment
A

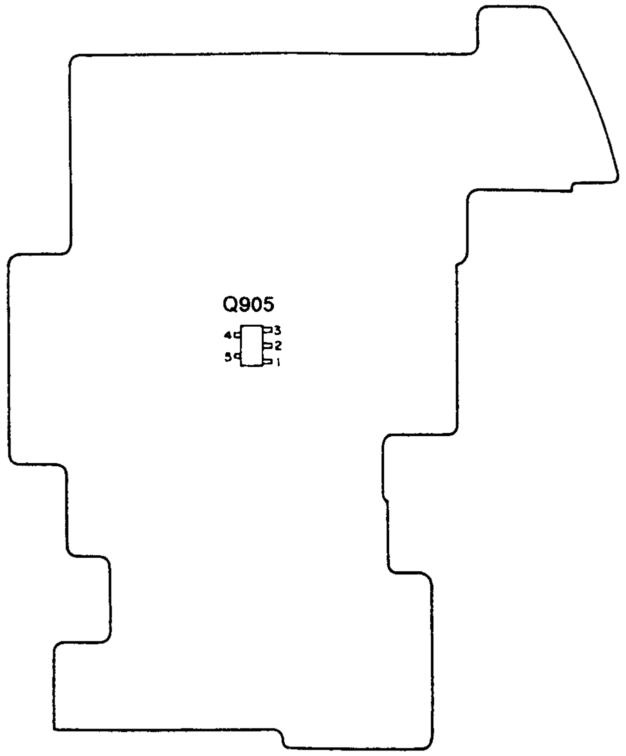
Fig. 6-1-23.

1-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

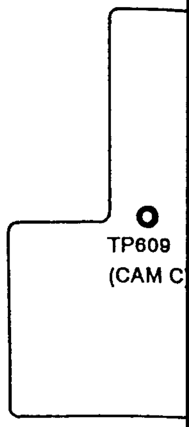
DD-78 BOARD (COMPONENT SIDE)



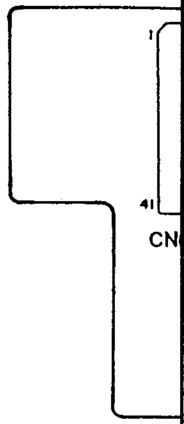
DD-78 BOARD (CONDUCTOR SIDE)



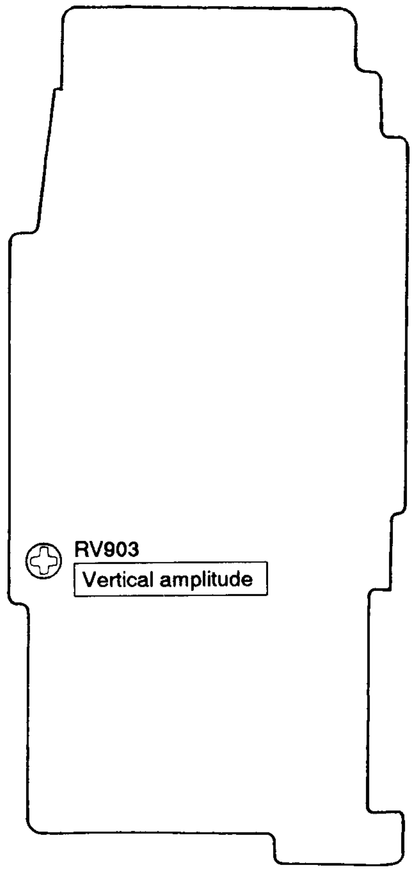
VC-161 BOAR



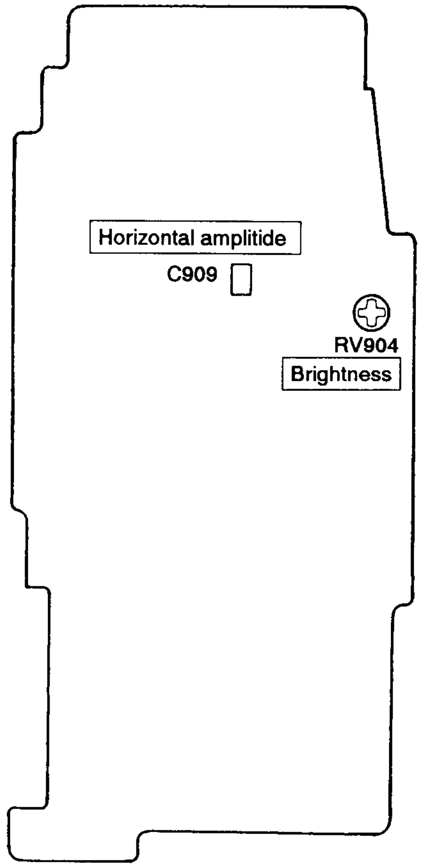
VC-161 BOAR



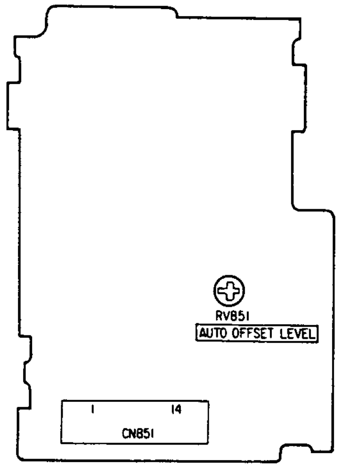
VF-65 BOARD (COMPONENT SIDE)


RV903
Vertical amplitude

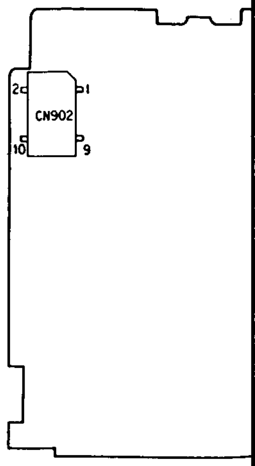
VF-65 BOARD (CONDUCTOR SIDE)


Horizontal amplitide
C909
RV904
Brightness

VF-72 BOARD
(CONDUCTOR SIDE)

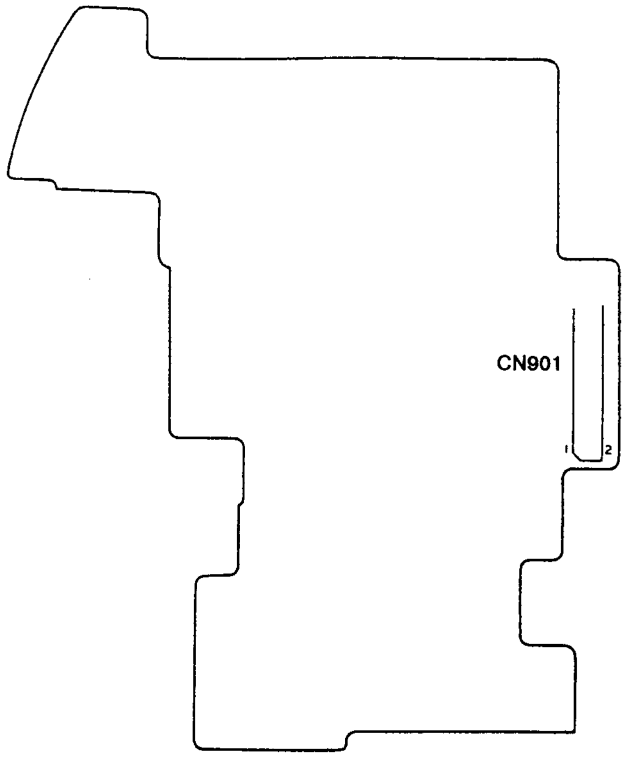

RV851
AUTO OFFSET LEVEL
1
14
CN851

VF-73 BOARD
(COMPONENT SIDE

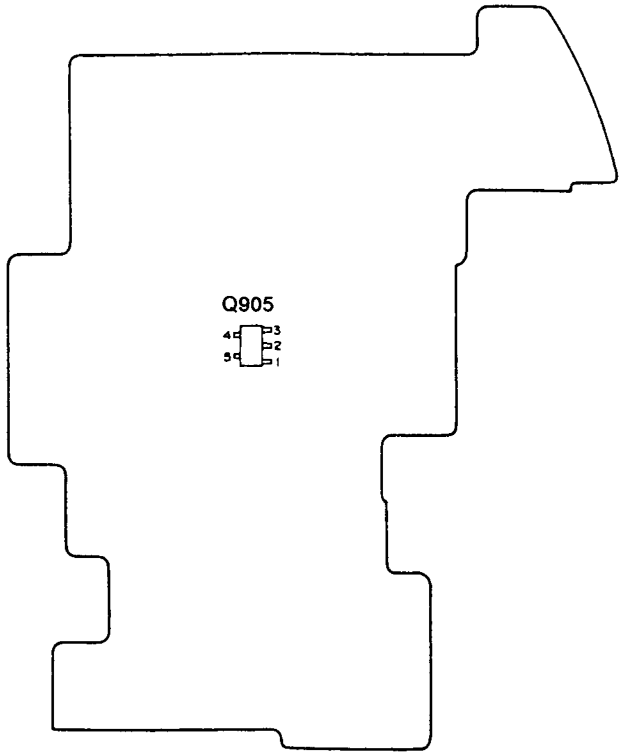

CN902
1
2
9
10

1-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

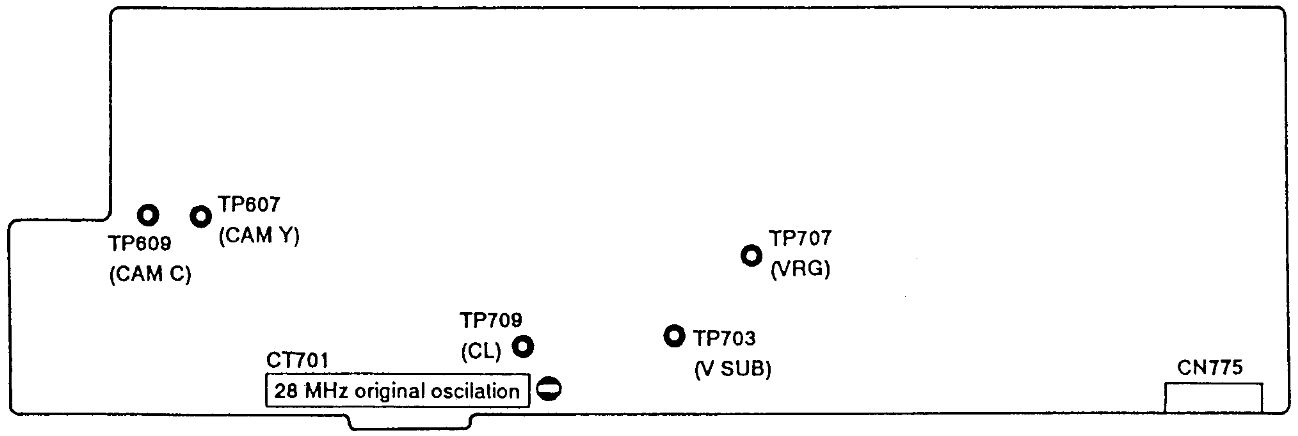
DD-78 BOARD (COMPONENT SIDE)



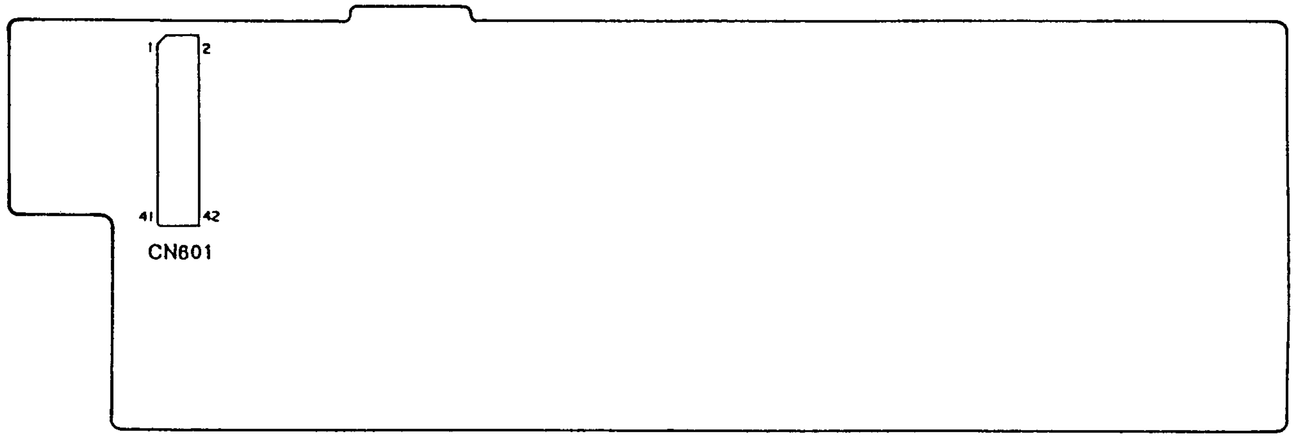
DD-78 BOARD (CONDUCTOR SIDE)



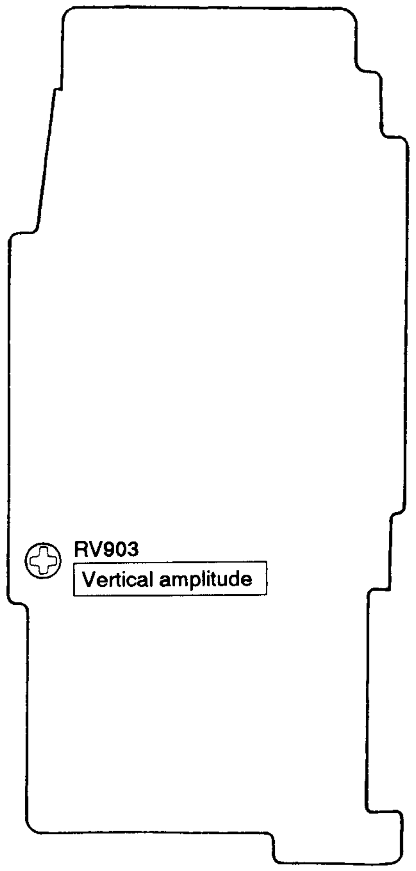
VC-161 BOARD (COMPONENT SIDE)


TP607
(CAM Y)
TP609
(CAM C)
TP707
(VRG)
TP709
(CL)
TP703
(V SUB)
CT701
28 MHz original oscilation
CN775

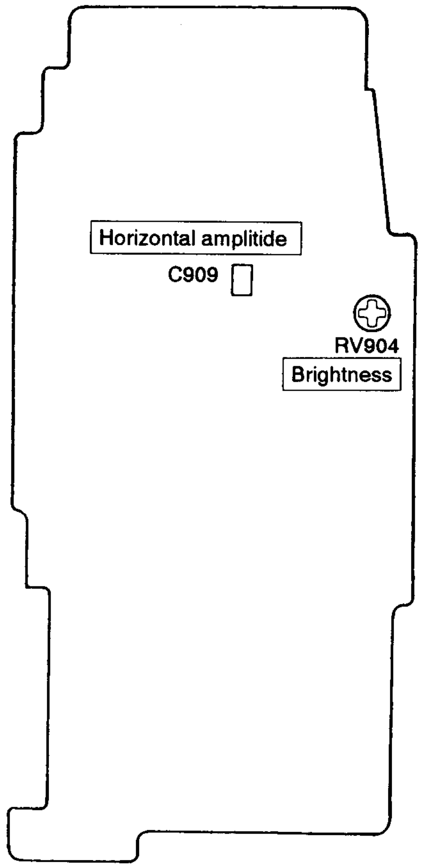
VC-161 BOARD (CONDUCTOR SIDE)


1
2
41
42
CN601

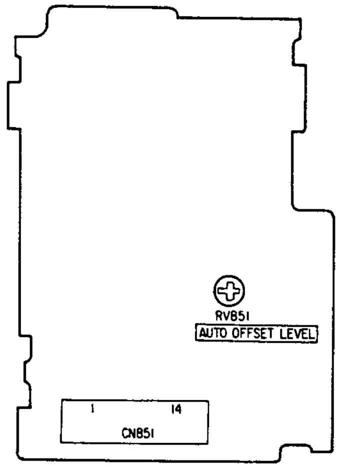
VF-65 BOARD (COMPONENT SIDE)


RV903
Vertical amplitude

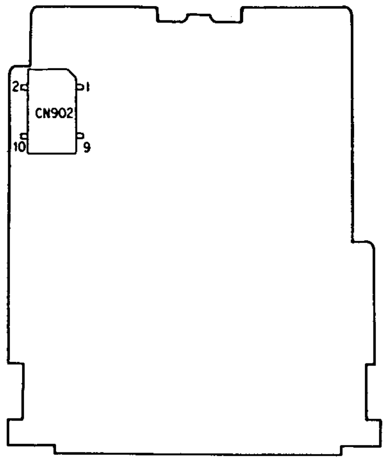
VF-65 BOARD (CONDUCTOR SIDE)


Horizontal amplitide
C909
RV904
Brightness

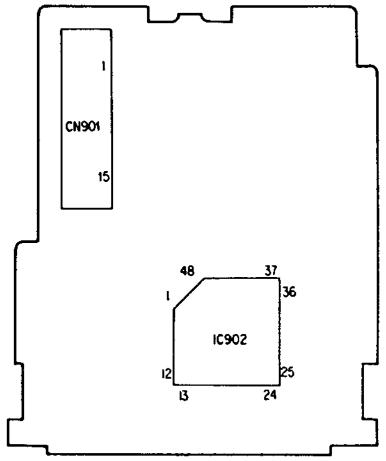
VF-72 BOARD (CONDUCTOR SIDE)


RV851
AUTO OFFSET LEVEL
1
14
CN851

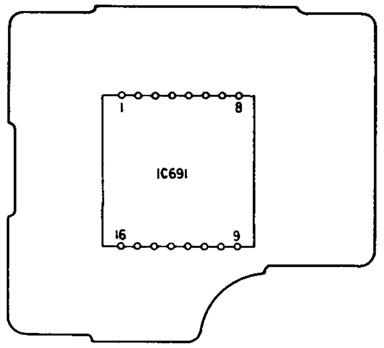
VF-73 BOARD (COMPONENT SIDE)


2
1
CN902
10
9

VF-73 BOARD (CONDUCTOR SIDE)


1
CN901
15
48
37
1
36
IC902
12
25
13
24

CD-137 BOARD


1
8
IC691
16
9

5. Overall Level Characteristics, Distortion Check

Mode	Self recording/playback
Signal	400 Hz, –7.5 dBs: Audio input terminal (left) [right] No signal: Audio input terminal (right) [left]
Measurement Point	Audio output terminal (left) [right]
Measuring Instrument	Audio level meter and distortion meter
Specified Value	Level: –7.5 ± 2.5 dBs Distortion rate: Below 0.8% (Note 2)

Note: 1) The [ ] indicates the measuring point during the right channel check.

2) Value when the 200 kHz to 6 kHz band-path filter is used

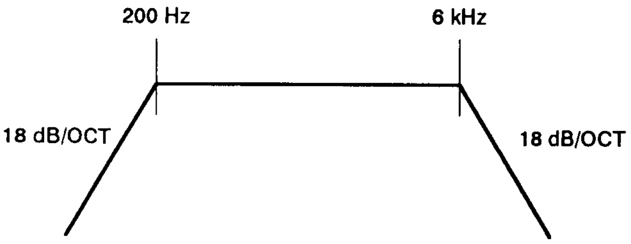


Fig. 6-3-50.

Checking method:

1) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (left) [right].

   Note: Be sure to insert the shorting plug to the terminal that was not signal input.

2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the 400 Hz signal level of the audio output terminal (left) [right] is –7.5 ± 2.5 dBs, and that the distortion rate is below 0.8% (Note 2).

6. Separation Check

Mode	Self recording /playback
Signal	No signal: Audio input terminal (left) [right] 400 Hz, –7.5 dBs: Audio input terminal (right) [left]
Measurement Point	Audio output terminal (left) [right]
Measuring Instrument	Audio level meter (Use an IHF-A curve auditory correction filter)
Specified Value	Below –27.5 dBs

Note: The [ ] indicates the measuring point during the right channel check.

Checking method:

1) Insert a shorting plug into the audio input terminal (left) [right], and input a 400 Hz, –7.5 dBs signal only to the audio input terminal (right) [left].
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the cross talk level (400 Hz) of the audio output terminal (left) [right] is below –27.5 dBs.

3. 1.7 MHz Deviation Adjustment

Sets the spectrum of the R-ch (L–R/2 signal) level modulated during recording. If deviated, the crosstalk of the audio signal will occur and the audio level will drop during both playback and recording.

Mode	Recording
Signal	Input the AFM DEV jig output signal to the right and left audio input terminals
Measuring point	CH1: AFM DEV jig TP32 CH2: AFM DEV jig TP2
Measuring device	Oscilloscope ADD mode CH2 INV mode
Adjustment page	D
Adjustment address	8E
Specified value	The difference between CH1 signal and CH2 signal should be below 40 mV.

Connection

1) Connect CN2 of the AFM DEV jig to CN002 of the VS board.
2) Connect the audio output terminal (J1 and J2) of the AFM DEV jig to video/audio input/output terminal of the unit.
3) Connect TP28 (DC), TP27 (GND) of the AFM DEV jig to the DC power supply (+7 to +9 Vdc).
4) Set the AFM DEV jig switches to the following positions.
   S1 ·············BIL position
   S2 ·············PAL position
   S3 ·············INV position

Adjustment Method

1) Match the vertical ranges of CH1 and CH2 of the oscilloscope to each other.
2) Set the oscilloscope to the ADD mode and CH2 to the INV (inverse) mode.
3) Set data:01 to page:1, address:00.
4) Change the data of page:D, address:8E and minimize the audio signal level difference (A).
5) Press the PAUSE button of the adjusting remote commander.

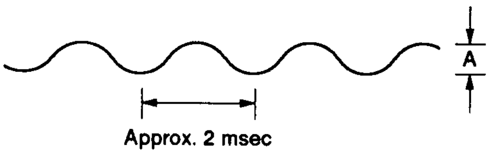


Fig. 6-3-49.

4. BPF Adjustment

Sets the BPF passing frequency so that the AFM signal can separate from the playback RF signal properly. If deviated. the mono/stereo mode will be differentiated incorrectly, and noises and distortions will increase during high volume playback.

Mode	Playback
Signal	Alignment tape: For BPF adjustment (WR5-11CS)
Measuring point	Right or left audio output terminal
Measuring device	Distortion meter
Adjustment page	D
Adjustment address	8D
Specified value	The right and left channel distortion rates should be almost the same (within ± 1%) and minimum

Adjustment Method

1) Set data:01 to page:1, address:00.
2) Set the Hi-Fi sound switch (in the menu display) to “ [2] ”.
3) Change the data of page:D, address:8D and minimize the distortion rate.
4) Press the PAUSE button of the adjusting remote commander.
5) Set the Hi-Fi sound switch to “ [1] ”.
6) Change the data of page:D, address:8D and minimize the distortion rate.
7) Press the PAUSE button of the adjusting remote commander.
8) Repeat steps 2) to 7) and set the data of address:8D so that the distortions rates when the Hi-Fi sound switch is set to “ [2] ” and set to “ [1] ” respectively are almost the same and minimum.
9) Press the PAUSE button of the adjusting remote commander.

1. E-E Output Level Check

Mode	Record
Signal	400 Hz, -7.5 dBs, Audio input terminal (left) [right]
Measurement Point	(Headphone terminal left) [Headphone terminal right]
Measuring Instrument	Audio lever meter
Specified Value	-7.0 ± 2.0 dBs

Checking method:

1) Check that the 400 Hz signal level satisfies the specified value.

2. 1.5 MHz Deviation Adjustment

Sets the spectrum of the L-ch (L+R/2 signal) level modulated during recording. If deviated, the crosstalk of the audio signal will occur and the audio level will drop during both playback and recording.

Mode	Recording
Signal	Input the AFM DEV jig output signal to the right and left audio input terminals
Measuring point	CH1: AFM DEV jig TP31 CH2: AFM DEV jig TP3
Measuring device	Oscilloscope ADD mode CH2 INV mode
Adjustment page	D
Adjustment address	8F
Specified value	The difference between CH1 signal and CH2 signal should be below 40 mV.

Connection

1) Connect CN2 of the AFM DEV jig to CN002 of the VS board.
2) Connect the audio output terminal (J1 and J2) of the AFM DEV jig to video/audio input/output terminal of the unit.
3) Connect TP28 (DC), TP27 (GND) of the AFM DEV jig to the DC power supply (+7 Vdc to +9 Vdc).
4) Set the AFM DEV jig switches to the following positions.
   S1 ·············BIL position
   S2 ·············PAL position
   S3 ·············SIN position

Adjustment Method

1) Match the vertical ranges of CH1 and CH2 of the oscilloscope to each other.
2) Set the oscilloscope to the ADD mode and CH2 to the INV (inverse) mode.
3) Set data:01 to page:1, address:00.
4) Change the data of page:D, address:8F and minimize the audio signal level difference (A).
5) Press the PAUSE button of the adjusting remote commander.

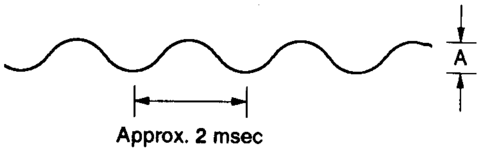


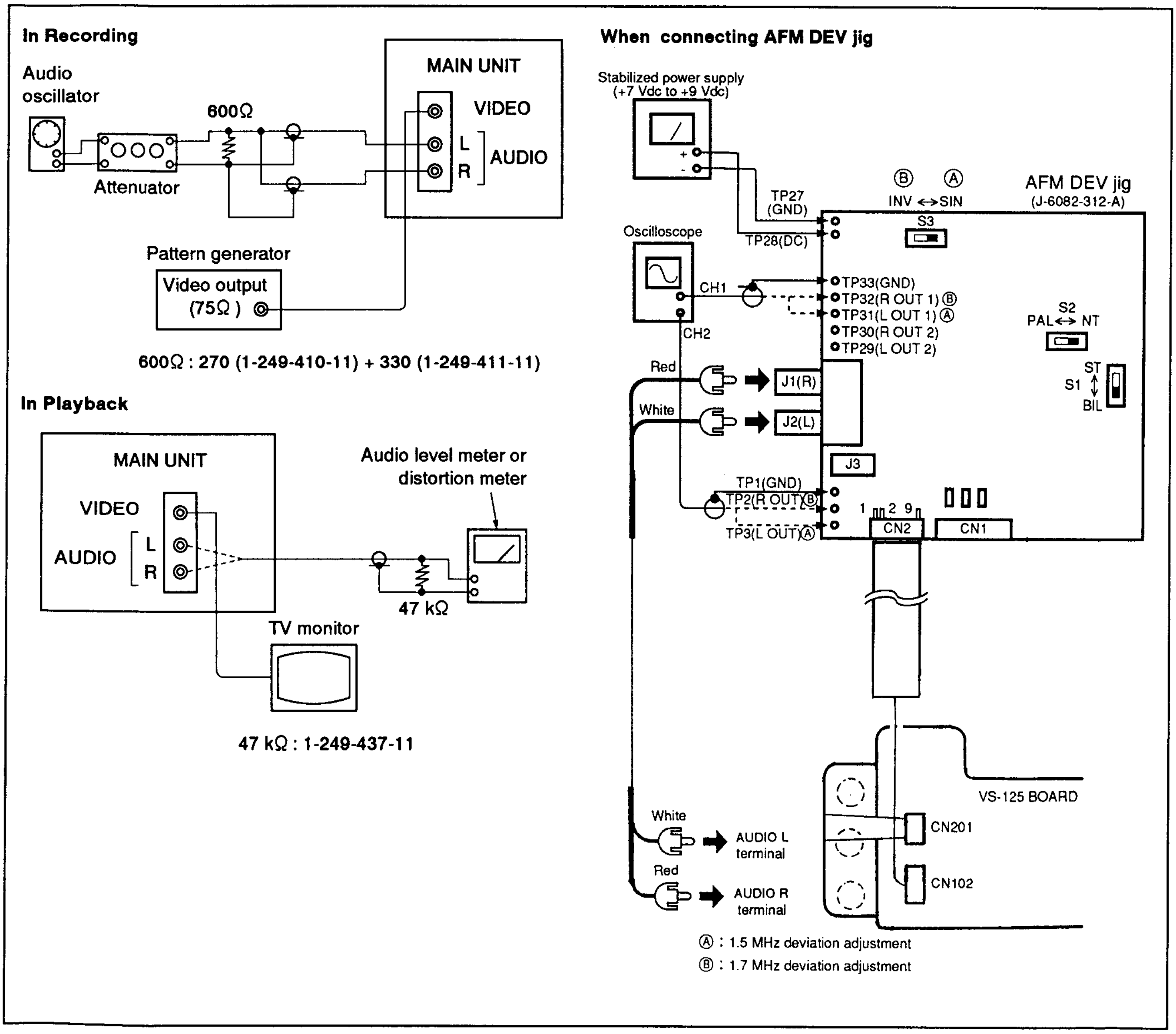
Fig. 6-3-48.

3-7. AUDIO SYSTEM ADJUSTMENT

- Perform the adjustment using the color bar signal as a video signal input for VIDEO terminal.
- Unless specified otherwise, use a normal MP tape.
- The items to be adjusted for the R channel will be indicated within the [ ], in regard to the adjusting items to be adjusted for both L and R channels.
- Set the Hi-Fi sound switch in the menu display to "Stereo" position, unless specified otherwise.

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 6-3-47, and perform adjustments at the power switch [VTR or PLAYER] position.



In Recording

600Ω : 270 (1-249-410-11) + 330 (1-249-411-11)

In Playback

47 kΩ : 1-249-437-11

When connecting AFM DEV jig

Ⓐ : 1.5 MHz deviation adjustment

Ⓑ : 1.7 MHz deviation adjustment

Audio oscillator
600Ω
Attenuator
MAIN UNIT
VIDEO
L
R
AUDIO
Pattern generator
Video output (75Ω)
MAIN UNIT
VIDEO
AUDIO
L
R
Audio level meter or distortion meter
47 kΩ
TV monitor
Stabilized power supply (+7 Vdc to +9 Vdc)
+
-
TP27 (GND)
TP28(DC)
Oscilloscope
CH1
CH2
Red
White
J1(R)
J2(L)
J3
Ⓑ Ⓐ
INV ↔SIN
S3
AFM DEV jig (J-6082-312-A)
TP33(GND)
TP32(R OUT 1)Ⓑ
TP31(L OUT 1)Ⓐ
TP30(R OUT 2)
TP29(L OUT 2)
S2
PAL↔ NT
ST
S1
BIL
TP1(GND)
TP2(R OUT)Ⓑ
TP3(L OUT)Ⓐ
1 2 9
CN2
CN1
VS-125 BOARD
CN201
CN102
White
AUDIO L terminal
Red
AUDIO R terminal

Fig. 6-3-47.

[Adjustment Procedure]

1) E-E output level check
2) 1.5 MHz deviation adjustment
3) 1.7 MHz deviation adjustment
4) BPF adjustment
5) Overall level characteristics, distortion check
6) Separation check

20. REC CHROMA Level Adjustment (VS board)

Set REC CHROMA signal level. If it is lower than its normal level, chroma signal noise in played back picture will increase. If it is set higher, Y signal noises will increase and white modulation noises will be prodused.

Mode	Record (SP)
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	30, 31, 32, 33, 34, 35, 36, 37
Specified Value	A=32 ± 3 mVp-p

Note 1: Use a ME type tape.

Connection:

1) Disconnect HE board.
2) Connect Pin ⑤ of IC508 and GND with a 0.01 μF capacitor. (Parts code: 1-101-004-00)
3) Disconnect AU board.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 30, and adjust so that the REC CHROMA signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Read the data of page: D, address: 30, and this data is named D30.
5) Set data to address: 31 to 37 of page: D as shown in following table.

(Be sure to press the PAUSE button of the adjusting remote commander after setting each data.)

Address	Data
31	D30
32	D30
33	D30
34	D30
35	D30
36	D30
37	D30

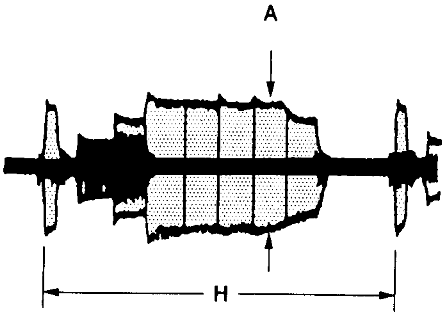


Fig. 6-3-45.

21. REC ATF Level Check (VS board)

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope
Specified Value	A=9.4 ± 1.5 mVp-p

Note 1: Use a ME type tape.

Connection:

1) Disconnect HE board.
2) Disconnect AU board.

Adjusting method:

1) Check that the REC ATF signal level (A) satisfise the specified value.

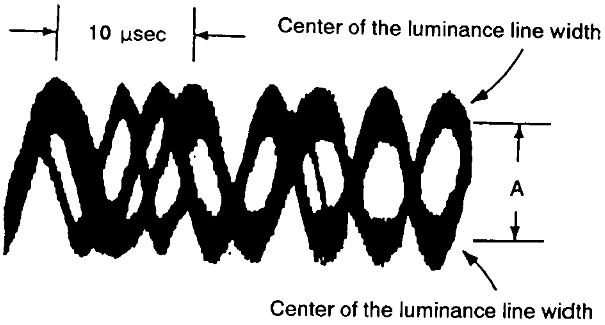

10 µsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 6-3-46.

19. REC L Adjustment (VS board)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorate, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	Record (SP)
Signal	No signal (VIDEO input)
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	3A, 38, 3B, 39
Specified Value	A=8.4 ± 1.0 mVp-p

Note 1: Use a ME type tape.

Note 2: AU board is required for this adjustment.

Note 3: Do not insert any plug into the right audio input terminal.

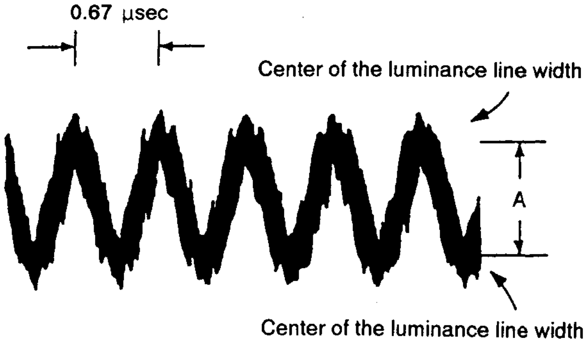


Fig. 6-3-44.

Connection:

1) Disconnect HE board.
2) Connect Pin ⑤ of IC508 and GND with a 0.01 μF capacitor. (Parts code: 1-101-004-00)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 3A, and adjust so that the REC AFM signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Read the data of page: D, address: 3A, and this data is named D3A.
5) Set data: D3A to address: 38 of page D.
6) Press the PAUSE button of the adjusting remote commander.
7) Convert D3A to decimal notation, and obtain D3A′.
   (Refer to Table 6-1-3. "Hexadecimal notation-decimal notation conversion table")
8) Culculate D3B′ using following equation (decimal notation calculation).
   D3B′=D3A′+ 9
9) Convert D3B′ to hexadecimal notation, and obtain D3B.
10) Set data: D3B to address: 3B of page D.
11) Press the PAUSE button of the adjusting remote commander.
12) Set data: D3B to address: 39 of page D.
13) Press the PAUSE button of the adjusting remote commander.
14) Perform "REC CHROMA Level Adjustment".

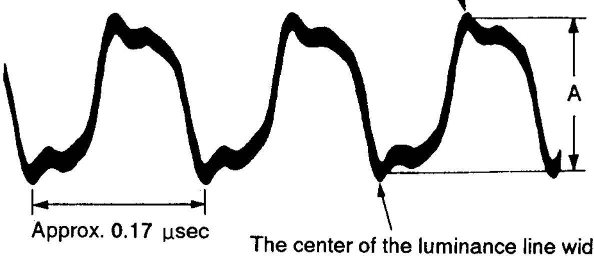
18. REC Y Level Adjustment (VS board)

Recording level of luminance signal setting. If deviated, this causes black stretch over modulation noise or color shade.

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope Board width limit: 20 MHz
Adjustment Page	D
Adjustment Address	44, 40, 45, 41, 47, 43, 46, 42
Specified Value	A=153 ± 5 mVp-p

Note: Use a ME type tape.

The center of the luminance line width of this section.



The center of the luminance line width of this section.

Fig. 6-3-43.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) After memorizing the data of address: 3A of page: D, set data: FF to the address.
3) Set data: FF to page: D, address: 40 and press the PAUSE button of the adjusting remote commander.
4) Change the data of page: D, address: 44, and adjust so that REC Y level (A) becomes the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Read the data of page: D, address: 44 and this data is named D_{44}.
7) Convert D_{44} to decimal notation, and obtain D_{44}'.
   (Refer to Table 6-1-3. "Hexadecimal notation – decimal notataion conversion table")
8) Calculate D_{45}', D_{46}' and D_{47}' using following equations (decimal notation calculation).
   $D_{45}'=D_{44}'+20$
   $D_{46}'=D_{44}'+5$
   $D_{47}'=D_{44}'+14$
9) Convert D_{45}', D_{46}' and D_{47}' to hexadecimal notation and obtain D_{45}, D_{46} and D_{47}.
10) Set data to address: 40, 41, 42, 43, 45, 46 and 47 of page: D as shown in following table.
   (Be sure to press the PAUSE button of the adjusting remote commander after setting each data.)
11) Set the data memorized at step 2) to address: 3A of page: D and press the PAUSE button of the adjusting remote commander.

Address	**Data**
40	D_{44}
41	D_{45}
42	D_{46}
43	D_{47}
45	D_{45}
46	D_{46}
47	D_{47}

16. Chroma Emphasis Adjustment 2 (VS board)

Emphasis center frequency setting. If deviated, this causes unnatural color.

Mode	Playback
Signal	Alignment tape: For checking operations Color bar section
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	D
Adjustment Address	81, 80
Specified Value	The path from the blue luminance point to black luminance point should be a straight line.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 81, and adjust so that the path from the blue luminance point to black luminance point becames a straight line.
3) Press the PAUSE button of the adjusting remote commander.
4) Set the same data as address: 81 of page: D to address: 80 of page: D.
5) Press PAUSE button of the adjusting remote commander.

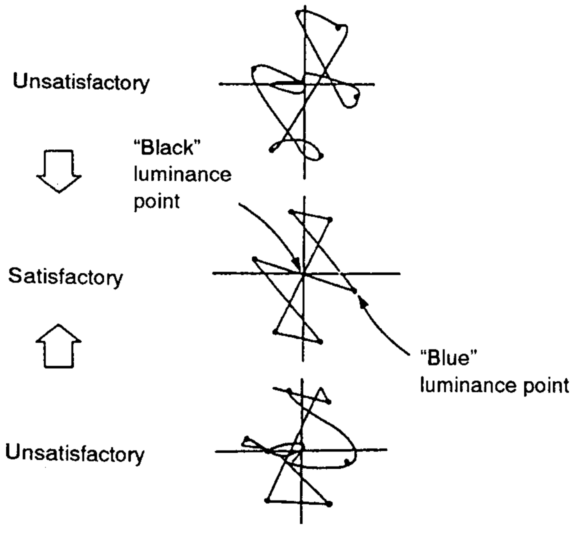

Unsatisfactory
"Black" luminance point
Satisfactory
"Blue" luminance point
Unsatisfactory

Fig. 6-3-41.

17. Comb Filter Fine Adjustment (VS board)

Set the level and phase of the 1H delayed signal for the comb filter. If deviated, this causes marked occurrence of beets in played back picture.

Mode	Playback
Signal	Alignment tape: For checking operations Color bar section
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjusting Element	
Adjustment Page	D
Adjustment Address	71, 84
Specified Value	Minimum color luminance point movement when the "Edit" switch is turned on/off

Note 1: Turn the edit ON/OFF at the menu screen.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Minimize the movements of the color luminance point when the edit is on/off with the data of page: D, address: 84 changed.
3) Change the data of page: D, address: 71 and minimize the movements of the color luminance point when the edit is on/off
4) Press the PAUSE button of the adjusting remote commander.
5) Repeat steps 2) to 4).

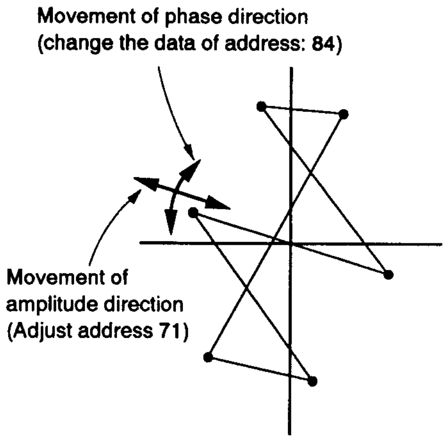

Movement of phase direction
(change the data of address: 84)
Movement of amplitude direction
(Adjust address 71)

Fig. 6-3-42.

14. Hi8 Mode Y FM Deviation Adjustment (VS board)

Hi8 mode FM deviation of REC Y setting. If deviated, this causes too bright/dark image, or marked occurrence of black picture or deteriorated resolution.

Mode	Record and playback
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑰ of IC201 (DL IN 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	76
Specified Value	A=0.50 ± 0.01V

Note 1: Check that "Emphasis Input Level Adjustment", have been completed.

Note 2: The chroma signal input is not required.

Note 3: Insert a plug into the S VIDEO terminal.

Adjusting method:

1) Insert a ME type tape.
2) Set data: 01 to page: 1, address: 00.
3) Record the color bar signal.
4) Playback the recorded signal.
5) Check the playback signal level (A).
   Specification:A=0.50 ± 0.01V
6) If the specification is not satisfied, change the data of page: D, address: 76, and repeat steps 3) to 5).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

7) Press the PAUSE button of the adjusting remote commander.
8) Perform "Hi8 Mode Y FM Carrier Frequency Adjustment".

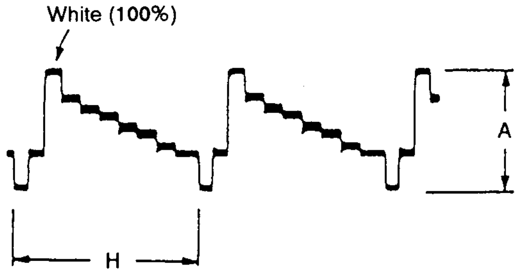


Fig. 6-3-39.

15. Chroma Emphasis Adjustment 1 (VS board)

Emphasis center frequency setting. If deviated, this causes unnatural color.

Mode	Record
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑧ of IC201 (REC C OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	80, 81
Specified Value	Minimum fo component

Adjusting method:

1) Set to the record mode.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 00 to page: 2, address: 00.
4) Set data: 04 to page: 2, address: B0.
5) After memorizing the data of address: 9A of page: 2, set data: 02 to the address.
6) Change the data of page: D, address: 80, and adjust so that the amplitude of the latter section of the chroma signal (red section) becames minimum.
7) Press the PAUSE button of the adjusting remote commander.
8) Set the same data as address: 80 of page: D to address: 81 of page D.
9) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set the data memorized at step 5) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0.

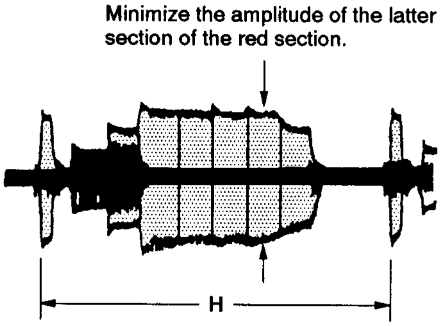

Minimize the amplitude of the latter section of the red section.
H

Fig. 6-3-40.

12. Standard 8 mm Mode Y FM Deviation Adjustment (VS board)

Standard 8 mm mode FM deviation of REC Y setting. If deviated, this causes too bright/dark image, or marked occurrence of black picture or deteriorated resolution.

Mode	Record and playback
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑰ of IC201 (DL IN 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	77
Specified Value	A=0.50 ± 0.01V

Note 1: Check that "Emphasis Input Level Adjustment", have been completed.

Note 2: The chroma signal input is not required.

Note 3: Insert a plug into the S VIDEO terminal.

Adjusting method:

1) Insert a normal MP type tape.
2) Set data: 01 to page: 1, address: 00.
3) Record the color bar signal.
4) Playback the recorded signal.
5) Check the playback signal level (A).
   Specification:A=0.50 ± 0.01V
6) If the specification is not satisfied, change the data of page: D, address: 77, and repeat steps 3) to 5).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

7) Press the PAUSE button of the adjusting remote commander.
8) Perform "Normal Mode Y FM Carrier Frequency Adjustment".

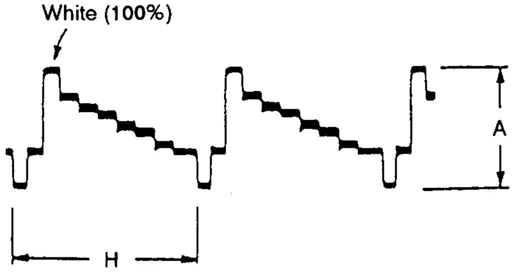


Fig. 6-3-37.

13. Hi8 Mode Y FM Carrier Frequency Adjustment (VS board)

Hi8 mode FM carrier frequency of REC Y setting. If deviated, this caused blurred played back picture or deteriorated resolution.

Mode	Record
Signal	No signal (CAMERA input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	74
Specified Value	6.000 ± 0.01 MHz

Adjusting method:

1) Insert a ME type tape.
2) Set data: 01 to page: 1, address: 00.
3) Change the data of page: D, address: 74, and adjust so that the Y FM carrier frequency becomes the specified value.
4) Press the PAUSE button of the adjusting remote commander.

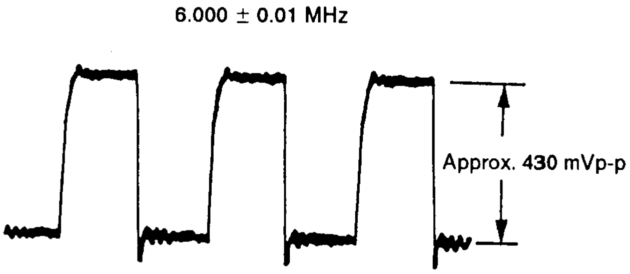


Fig. 6-3-38.

10. PB Y OUT Level Adjustment (VS board)

PB LINE OUT Y level setting. If deviated, this causes too bright or too dark picture.

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-8CSE) Color bar section
Measurement Point	Pin ② of CN201 (Y IN/OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	83
Specified Value	A=1.045 ± 0.05 V

Note 1: Connect Pin ② of CN201 and Pin ③ of CN201 (S-Y GND) with a 75Ω resistor.
(Part code: 1-247-804-11)

Note 2: Insert a plug into the S VIDEO terminal.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 83, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

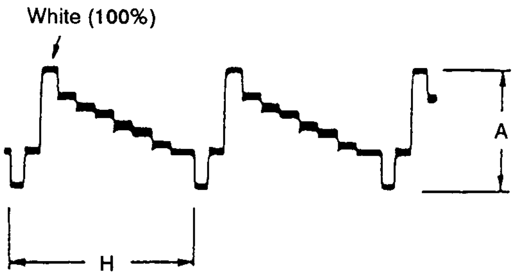


Fig. 6-3-35.

11. Standard 8 mm Mode Y FM Carrier Frequency Adjustment (VS board)

Standard 8 mm mode FM carrier frequency of REC Y setting. If deviated, this caused blurred played back picture or deteriorated resolution.

Mode	Record
Signal	No signal (CAMERA input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	75
Specified Value	4.385 ± 0.01 MHz

Adjusting method:

1) Insert a normal MP type tape.
2) Set data: 01 to page: 1, address: 00.
3) Change the data of page: D, address: 75, and adjust so that the Y FM carrier frequency becomes the specified value.
4) Press the PAUSE button of the adjusting remote commander.

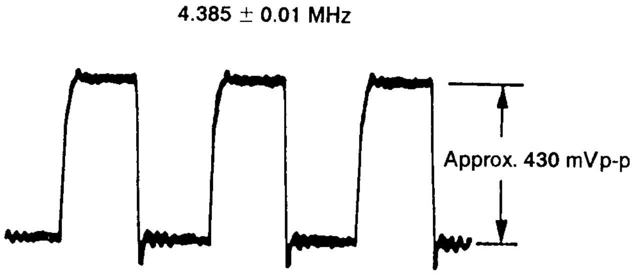


Fig. 6-3-36.

8. DARK CLIP check (VS board)

Mode	Record (SP)
Signal	Color bar (CAMERA input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT)
Measuring Instrument	Oscilloscope
Specified Value	Hi8 mode ME tape: A=47 ± 10% Hi8 mode Hi8 MP tape: A=40 ± 10% Normal mode MP tape: A=60 ± 10%

Note 1: The chroma signal input is not required.

Checking method:

1) Set to the record mode.
2) Set data: 00 to page: 2, address: 00.
3) Set data: 04 to page: 2, address: B0.
4) After memorizing the data of address: 9A of page: 2, set data: 01 to the address.
5) Check that the dark clip level (A) satisfies the specified value.

Processing after completing adjustments

1) Set the data memorized at step 4) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0.

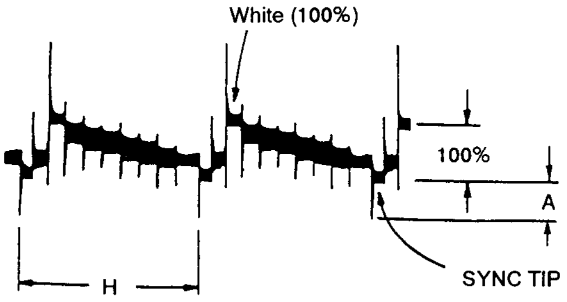


Fig. 6-3-33.

9. DE EMPH Level Adjustment (VS board)

De-emphasis input level setting. If deviated, this causes excessive brightness or darkness.

Mode	Playback
Signal	Alignment tape: For checking operations Color bar section Normal mode : WR5-5CSP Hi8 mode : WR5-8CSE
Measurement Point	Pin ⑰ of IC201 (DL IN 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	86, 87
Specified Value	A=0.50 ± 0.01V

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Playback the color bar section of the normal mode alignment tape (WR5-5CSP).
3) Change the data of page: D, address: 87, and adjust so that the Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Playback the color bar section of the Hi8 mode alignment tape (WR5-8CSE).
6) Change the data of page: D, address: 86 and adjust so that the Y signal level (A) becames specified value.
7) Press the PAUSE button of the adjusting remote commander.
8) Perform "PB Y OUT Level adjustment".

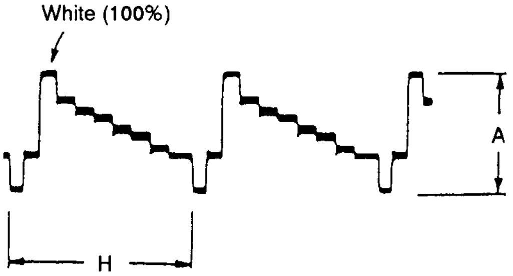


Fig. 6-3-34.

6. Emphasis Input Level Adjustment (VS board)

Y level of emphasis circuit setting. If deviated, this causes too bright or too dark image during play back after recording.

Mode	Record
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑤ of IC201 (EMPH IN) or Pin ⑤ of IC205
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	82
Specified Value	A=0.50 ± 0.01V

Note 1: The chroma signal input is not required.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 82, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

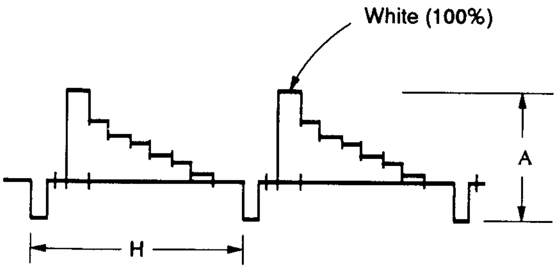


Fig. 6-3-31.

7. WHITE CLIP check (VS board)

Mode	Record (SP)
Signal	Color bar (CAMERA input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT)
Measuring Instrument	Oscilloscope
Specified Value	Hi8 mode ME tape: A=185 ± 10% Hi8 mode Hi8 MP tape: A=175 ± 10% Normal mode MP tape: A=220 ± 10%

Note 1: The chroma signal input is not required.

Checking method:

1) Set to the record mode.
2) Set data: 00 to page: 2, address: 00.
3) Set data: 04 to page: 2, address: B0.
4) After memorizing the data of address: 9A of page: 2, set data: 01 to the address.
5) Check that the white clip level (A) satisfies the specified value.

Processing after completing adjustments

1) Set the data memorized at step 4) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0.

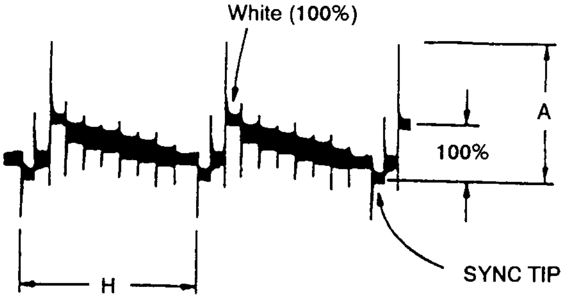


Fig. 6-3-32.

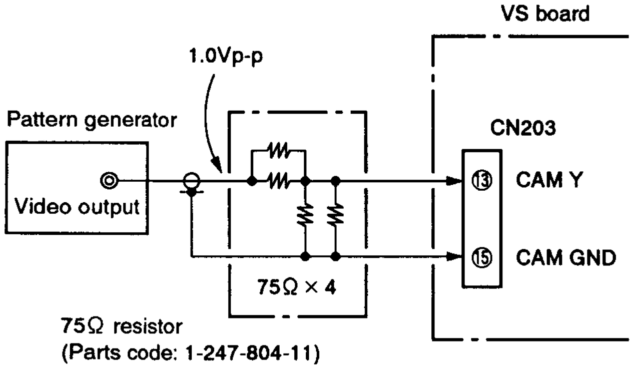
5. Comb Filter Adjustment (VS board)

Set the level and phase of the 2H delayed signal for the comb filter. If deviated, this causes marked occurrence of beets in played back picture.

Mode	Record
Signal	Color bar (Note 1)
Measurement Point	Pin ⑭ of IC201 (Y COMB OUT)
Measuring Instrument	Oscilloscope
Adjusting Element	
Adjustment Page	D
Adjustment Address	71, 84
Specified Value	Residual chroma component (A) is minimum.

Note 1: Connect the pattern generator as shown in the following figure.

Note 2: Connect Pin ㉔ of IC251 (INPUT SEL) and Pin ⑨ of IC251 (Vcc) with a jumper wire.


VS board
1.0Vp-p
Pattern generator
Video output
CN203
⑬ CAM Y
⑮ CAM GND
75Ω × 4
75Ω resistor
(Parts code: 1-247-804-11)

Adjusting method:

1) Set to the VIDEO input mode.
2) Set to the record mode.
3) Set data: 01 to page: 1, address: 00.
4) Set data: 00 to page: 2, address: 00.
5) Set data: 04 to page: 2, address: B0.
6) After memorizing the data of address: 9A of page: 2, set data: 10 to the address.
7) After memorizing the data of address: 9D of page: 2, set data: 30 to the address.
8) Change the data of page: D, address: 71, and adjust the residual chroma component (A) to minimum.
9) Change the data of page: D, address: 84 so that the residual chroma component becomes minimum.
10) Repeat 8) and 9).
11) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set the data memorized at step 7) to address: 9D of page: 2.
2) Set the data memorized at step 6) to address: 9A of page: 2.
3) Set data: 00 to page: 2, address: B0.

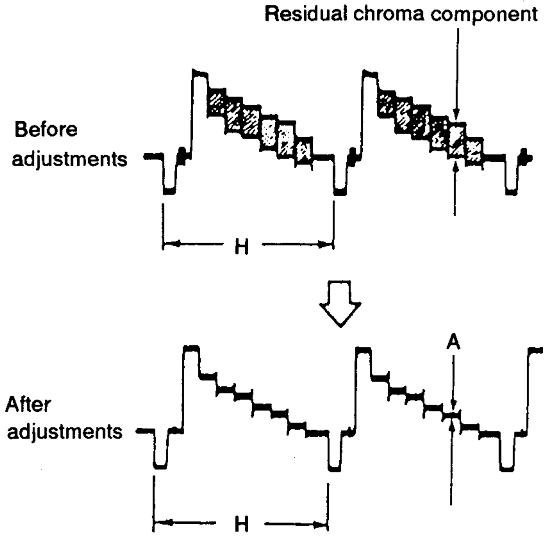

Residual chroma component
Before adjustments
H
A
After adjustments
H

Fig. 6-3-30.

2. Flying Erase Check (VS board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ⑫ of CN101 (FE (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: 8.0 ± 0.5 MHz Voltage: 6.0 ± 1 Vp-p (ME tape) Above 7.0 Vp-p (MP tape)

Checking method:

1) Check that the oscillation frequency and the oscillation voltage satisfieds the specified value.

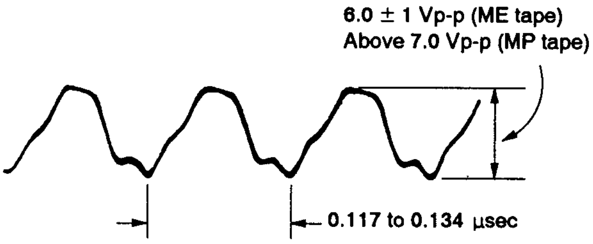


Fig. 6-3-27.

3. VXO Oscillation Frequency Check (VS board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ⑥① of IC201
Measuring Instrument	Frequency counter
Specified Value	4433619 ± 50 Hz

Note: Connect the frequency counter via a high impedance (approximately 10 MΩ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of pin ⑥① of IC201 is 4433619 ± 50 Hz.

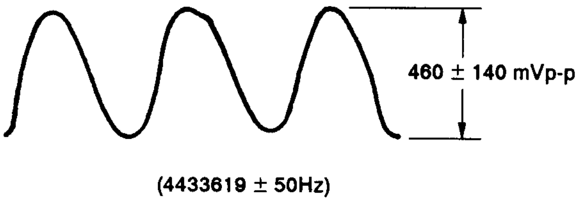


Fig. 6-3-28.

4. SYNC AGC Level Adjustment (VS board)

Adjust so that the Y signal level to be recorded becomes consistent. If it is not consistent, the camera EE image and OA image will be brighter or darker than normal.

Mode	Record
Signal	Color bar (Camera input) Note 1
Measurement Point	Pin ② of CN201 (Y IN/OUT) Note 2
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	70
Specified Value	A=1.010 ± 0.010 V

Note 1: The chroma signal input is not required.

Note 2: Connect Pin ② of CN201 and Pin ③ of CN201 (S-Y GND) with a 75Ω resistor.
75Ω resistor (Part code: 1-247-804-11)

Note 3: Insert a plug into the S VIDEO terminal.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 70, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

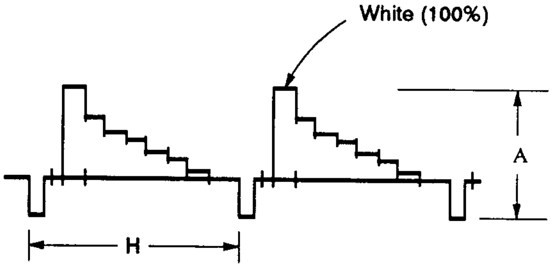


Fig. 6-3-29.

1. Playback Frequency Characteristic Adjustment (VS board)

Eliminate the differences in the head characteristics of each channel. If there are differences, flickers and over modulation noises will be produced.

Note 1: The adjusting element for CH2 is shown in parentheses [ ].

Mode	Playback
Signal	Alignment tape: For frequency characteristic adjustment (WR5-7CE)
Measurement Point	CH1: Pin ③ of CN102 (PB RF) EXT TRIG: Pin ④ of CN102 (RF SWP)
Measuring Instrument	Oscilloscope TRIG SLOPE: +, [-]
Adjustment Page	D
Adjustment Address	5A, 5B, 5C, 5D, 5E [5F, 60, 61, 62, 63]
Specified Value	4.5 MHz level: 8.5 MHz level= 3: (2 ± 0.2)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Press the PAUSE button of the adjusting remote commander.
3) Change the data of address: 5C [61] of page D, and adjust the level ratio of 4.5 MHz and 8.5 MHz of PB RF output waveform to the specified value.

   Note 2: After each address adjustment, be sure to press the PAUSE button of the adjusting remote commander and memorize the data.
4) Read the data of page: D, address: 5C, and this data is named D_{5C}.
5) Read the data of page: D, address: 61, and this data is named D_{61}.
6) Set data to address: 5A to 5E and 5F to 63 of page: D as shown in following table.

   (Be sure to press the PAUSE button of the adjusting remote commander after setting each data.)

Address	**Data**
5A	D_{5C}
5B	D_{5C}
5D	D_{5C}
5E	D_{5C}+8
5F	D_{61}
60	D_{61}
62	D_{61}
63	D_{61}+8

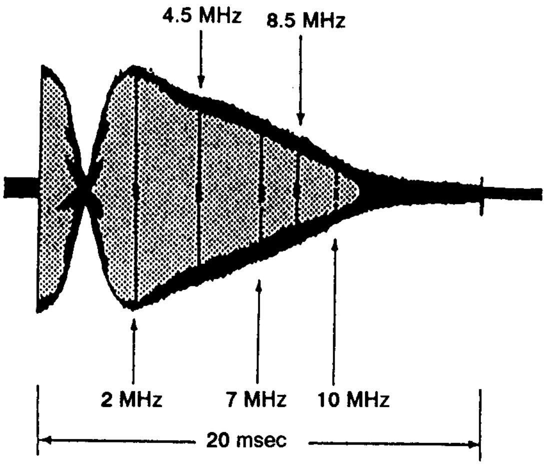


Fig. 6-3-26.

19. REC ATF Level Check (VS board)

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope
Specified Value	A=7.1 ± 1.5 mVp-p

Note 1: Use a MP type tape.

Connection:

1) Connect Emitter of Q113 and GND with a jumper wire.
2) Disconnect AU board.

Adjusting method:

1) Check that the REC ATF signal level (A) satisfise the specified value.

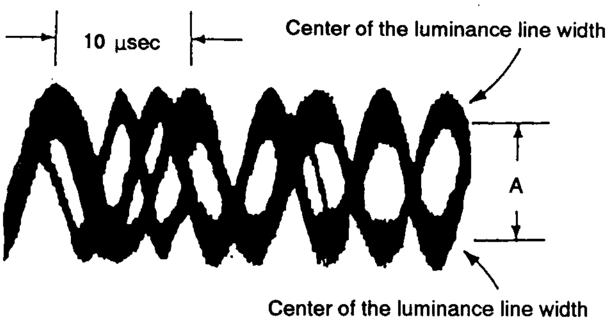

10 µsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 6-3-25.

3-6. Hi8 VIDEO SYSTEM ADJUSTMENTS

The adjustments of the video system must be performed according to the following adjustment procedure.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Figs. 6-3-2. and 6-3-3.

[Adjusting procedure]

1) Playback frequency characteristics adjustment
2) Flying erase check
3) VXO oscillation frequency check
4) SYNC AGC level adjustment
5) Comb filter adjustment
6) Emphasis input level adjustment
7) WHITE CLIP check
8) DARK CLIP check
9) DE EMPH level adjustment
10) PB Y out level adjustment
11) Standard 8 mm mode Y FM carrier frequency adjustment
12) Standard 8 mm mode Y FM deviation adjustment
13) Hi8 mode Y FM carrier frequency adjustment
14) Hi8 mode Y FM deviation adjustment
15) Chroma emphasis adjustment 1
16) Chroma emphasis adjustment 2
17) Comb filter fine adjustment
18) REC Y level adjustment
19) REC L adjustment
20) REC CHROMA level adjustment
21) REC ATF level check

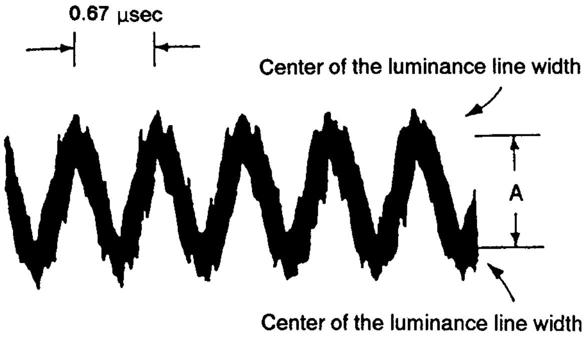

0.67 µsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 6-3-23.

18. REC CHROMA Level Adjustment (VS board)

Set REC CHROMA signal level. If it is lower than its normal level, chroma signal noise in played back picture will increase. If it is set higher, Y signal noises will increase and white modulation noises will be prodused.

Mode	Record (SP)
Signal	Color bar (VIDEO input)
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	33, 32, 37, 36
Specified Value	A=23 ± 3 mVp-p

Note 1: Use a MP type tape.

Connection:
1) Connect Emitter of Q113 and GND with a jumper wire.
2) Connect Pin ⑤ of IC508 and GND with a 0.01 μF capacitor. (1-101-004-00)
3) Disconnect AU board.

Adjusting method:
1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 33, and adjust so that the REC CHROMA signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Read the data of page: D, address: 33, and this data is named D33.
5) Set data: D33 to address: 32 of page D.
6) Press the PAUSE button of the adjusting remote commander.
7) Set data: D33 to address: 36 of page D.
8) Press the PAUSE button of the adjusting remote commander.
9) Set data: D33 to address: 37 of page D.
10) Press the PAUSE button of the adjusting remote commander.

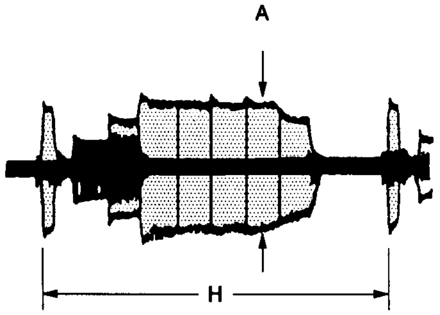


Fig. 6-3-24.

16. REC Y Level Adjustment (VS board)

Recording level of luminance signal setting. If deviated, this causes black stretch over modulation noise or color shade.

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope Board width limit: 20 MHz
Adjustment Page	D
Adjustment Address	47, 43, 46, 42
Specified Value	A=130 ± 5 mVp-p

Note 1: Use a normal MP type tape.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) After memorizing the data of address: 3B of page: D, set data: FF to the address.
3) Set data: FF to address: 43 of page: D, and press the PAUSE button of the adjusting remote commander.
4) Change the data of page: D, address: 47, and adjust so that REC Y level (A) becomes the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Set data to address: 42, 43, 46 of page: D as shown in following table.

(Be sure to press the PAUSE button of the adjusting remote control unit after setting each data.)

Address	Data
42	Same data as address: 47
43	Same data as address: 47
46	Same data as address: 47

7) Set the data memorized at step 2) to address: 3B of page: D and press the PAUSE button of the adjusting remote commander.

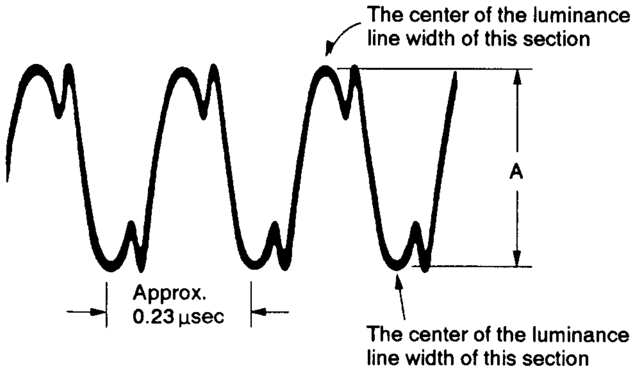

The center of the luminance line width of this section
A
Approx. 0.23 µsec
The center of the luminance line width of this section

Fig. 6-3-22.

17. REC L Adjustment (VS board)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorate, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	Record (SP)
Signal	No signal (VIDEO input)
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	3B, 39, 3A, 38
Specified Value	A=5.6 ± 1.0 mVp-p

Note 1: Use a MP type tape.
Note 2: AU board is required for this adjustment.
Note 3: For stereo model, do not insert any plug into the right audio input terminal.

Connection:

1) Connect Emitter of Q113 and GND with a jumper wire.
2) Connect Pin ⑤ of IC508 and GND with a 0.01 µF capacitor. (Parts cord: 1-101-004-00)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 3B, and adjust so that the REC AFM signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Read the data of page: D, address: 3B, and this data is named D3B.
5) Set data: D3B to address: 39 of page D.
6) Press the PAUSE button of the adjusting remote commander.
7) Convert D3B to decimal notation, and obtain D3B′. (Refer to Table 6-1-3. "Hexadecimal notation-decimal notation conversion table")
8) Culculate D3A′ using following equation (decimal notation calculation).
   D3A′=D3B′−7
9) Convert D3A′ to hexadecimal notation, and obtain D3A.
10) Set data: D3A to address: 3A of page D.
11) Press the PAUSE button of the adjusting remote commander.
12) Set data: D3A to address: 38 of page D.
13) Press the PAUSE button of the adjusting remote commander.
14) Perform "REC CHROMA Level Adjustment".

14. Chroma Emphasis Adjustment 2 (VS board)

Emphasis center frequency setting. If deviated, this causes unnatural color.

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Color bar section
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	D
Adjustment Address	81, 80
Specified Value	The path from the blue luminance point to black luminance point should be a straight line.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 81, and adjust so that the path from the blue luminance point to black luminance point becames a straight line.
3) Press the PAUSE button of the adjusting remote commander.
4) Set the same data as address: 81 of page: D to address: 80 of page: D.
5) Press PAUSE button of the adjusting remote commander.

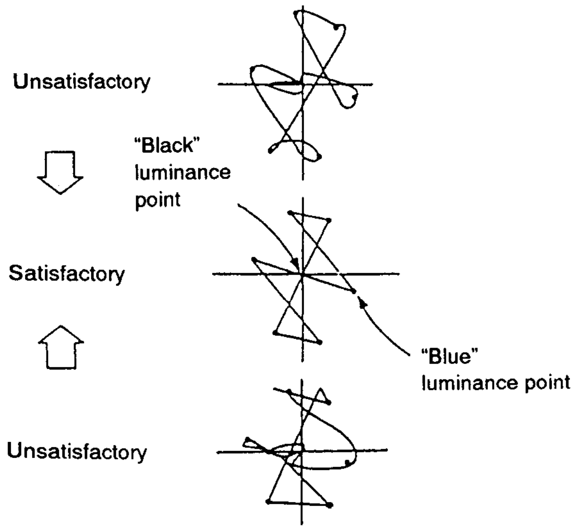

Unsatisfactory
"Black" luminance point
Satisfactory
"Blue" luminance point
Unsatisfactory

Fig. 6-3-20.

15. Comb Filter Fine Adjustment (VS board)

Set the level and phase of the 2H delayed signal for the comb filter. If deviated, this causes marked occurrence of beets in played back picture.

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Color bar section
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjusting Element	
Adjustment Page	D
Adjustment Address	71, 84
Specified Value	Minimum color luminance point movement when the "Edit" switch is turned on/off

Note 1: Turn the edit ON/OFF at the menu screen.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Minimize the movements of the color luminance point when the edit is on/off with the data of page: D, address: 84 changed.
3) Change the data of page: D, address: 71 and minimize the movements of the color luminance point when the edit is on/off
4) Press the PAUSE button of the adjusting remote commander.
5) Repeat steps 2) to 4).

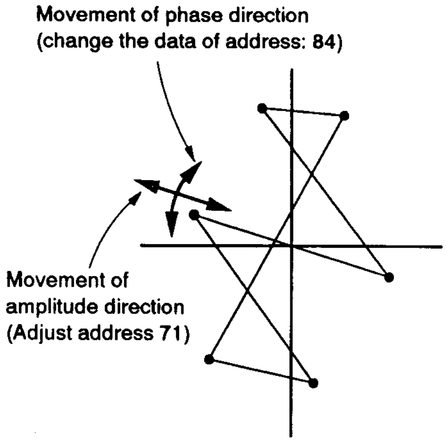

Movement of phase direction (change the data of address: 84)
Movement of amplitude direction (Adjust address 71)

Fig. 6-3-21.

12. Y FM Deviation Adjustment (VS board)

FM deviation of REC Y setting. If deviated, this causes too bright/dark image, or marked occurrence of black picture or deteriorated resolution.

Mode	Record and playback
Signal	Color bar (CAMERA input)
Measurement Point	Pin ㉓ of IC201 (DL IN 1)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	77
Specified Value	A=0.50 ± 0.01V

Note 1: Check that "Emphasis Input Level Adjustment", have been completed.

Note 2: The chroma signal input is not required.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback signal level (A).
   Specification:A=0.50 ± 0.01V
5) If the specification is not satisfied, change the data of page: D, address: 77, and repeat steps 2) to 4).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

6) Press the PAUSE button of the adjusting remote commander.
7) Perform "Y FM Carrier Frequency Adjustment".

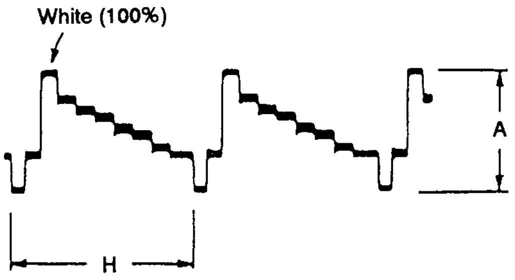


Fig. 6-3-18.

13. Chroma Emphasis Adjustment 1 (VS board)

Emphasis center frequency setting. If deviated, this causes unnatural color.

Mode	Record
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑧ of IC201 (REC C OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	80, 81
Specified Value	Minimum fo component

Adjusting method:

1) Set to the record mode.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 00 to page: 2, address: 00.
4) Set data: 04 to page: 2, address: B0.
5) After memorizing the data of address: 9A of page: 2, set data: 02 to the address.
6) Change the data of page: D, address: 80, and adjust so that the amplitude of the latter section of the chroma signal (red section) becames minimum.
7) Press the PAUSE button of the adjusting remote commander.
8) Set the same data as address: 80 of page: D to address: 81 of page D.
9) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set the data memorized at step 5) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0.

Minimize the amplitude of the latter section of the red section.

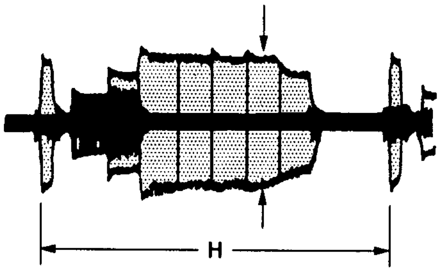


Fig. 6-3-19.

10. PB Y OUT Level Adjustment

PB LINE OUT Y level setting. If deviated, this causes too bright or too dark picture.

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Color bar section
Measurement Point	Pin ⑥ of CN201 (VIDEO I/O)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	83
Specified Value	A=1.045 ± 0.005 V

Note 1: Terminate the video output/output terminal at 75Ω. 75Ω resistor (Part code: 1-247-804-11)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 83, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

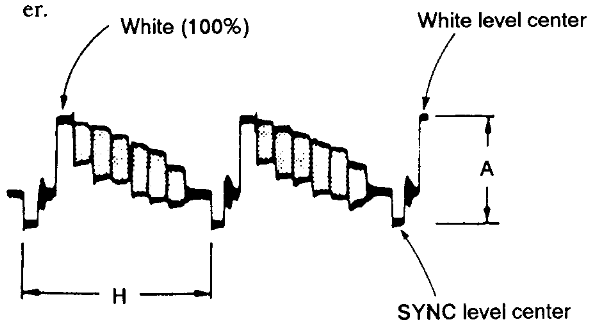


Fig. 6-3-16.

11. Y FM Carrier Frequency Adjustment (VS board)

FM carrier frequency of REC Y setting. If deviated, this caused blurred played back picture or deteriorated resolution.

Mode	Record
Signal	No signal (CAMERA input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT) (JL209)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	75
Specified Value	4.385 ± 0.01 MHz

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 75, and adjust so that the Y FM carrier frequency becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

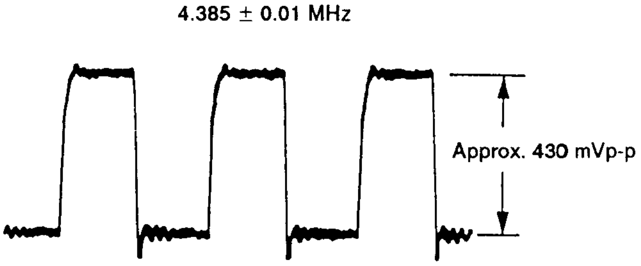


Fig. 6-3-17.

8. DARK CLIP check (VS board)

Mode	Camera record (SP)
Signal	Color bar (CAMERA input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT)
Measuring Instrument	Oscilloscope
Specified Value	A=60 ± 10%

Note 1: The chroma signal input is not required.

Checking method:
1) Set to the record mode.
2) Set data: 00 to page: 2, address: 00.
3) Set data: 04 to page: 2, address: B0.
4) After memorizing the data of address: 9A of page: 2, set data: 01 to the address.
5) Check that the dark clip level (A) satisfies the specified value.

Processing after completing adjustments
1) Set the data memorized at step 4) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0.

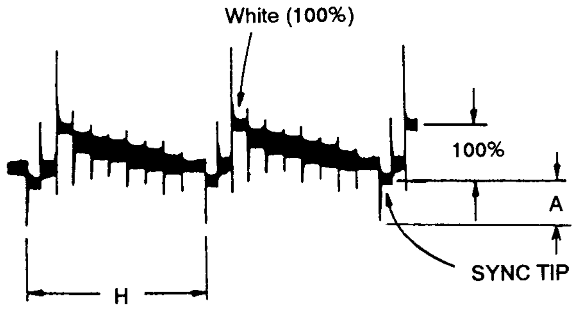


Fig. 6-3-14.

9. DE EMPH Level Adjustment (VS board)

De-emphasis input level setting. If deviated, this causes excessive brightness or darkness.

Mode	Playback
Signal	Alignment tape: For checking operations Color bar section (WR5-5CSP)
Measurement Point	Pin ㉓ of IC201 (DL IN 1)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	87
Specified Value	A=0.50 ± 0.01V

Adjusting method:
1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 87, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Perform "PB Y OUT Level Adjustment".

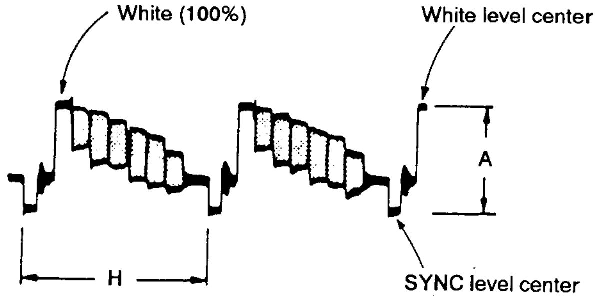


Fig. 6-3-15.

6. Emphasis Input Level Adjustment (VS board)

Y level of emphasis circuit setting. If deviated, this causes too bright or too dark image during play back after recording.

Mode	Camera record
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑤ of IC201 (EMPH IN) or Pin ⑤ of IC205
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	82
Specified Value	A=0.50 ± 0.01V

Note 1: The chroma signal input is not required.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 82, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

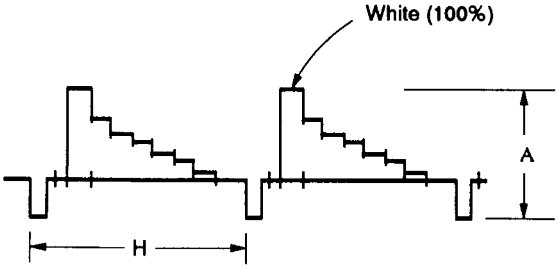


Fig. 6-3-12.

7. WHITE CLIP check (VS board)

Mode	Camera record (SP)
Signal	Color bar (CAMERA input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT)
Measuring Instrument	Oscilloscope
Specified Value	A=220 ± 10%

Note 1: The chroma signal input is not required.

Checking method:

1) Set to the record mode.
2) Set data: 00 to page: 2, address: 00.
3) Set data: 04 to page: 2, address: B0.
4) After memorizing the data of address: 9A of page: 2, set data: 01 to the address.
5) Check that the white clip level (A) satisfies the specified value.

Processing after completing adjustments

1) Set the data memorized at step 4) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0.

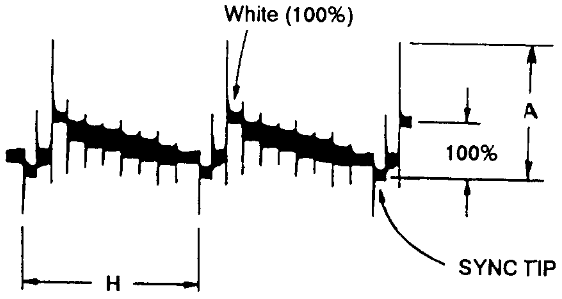


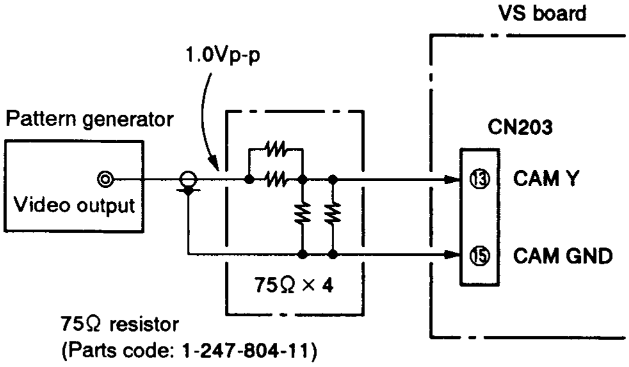
Fig. 6-3-13.

5. Comb Filter Adjustment (VS board)

Set the level and phase of the 2H delayed signal for the comb filter.

Mode	Camera record
Signal	Color bar (Note 1)
Measurement Point	Pin ⑭ of IC201 (Y COMB OUT)
Measuring Instrument	Oscilloscope
Adjusting Element	
Adjustment Page	D
Adjustment Address	71, 84
Specified Value	Residual chroma component (A) is minimum.

Note 1: Connect the pattern generator as shown in the following figure.


VS board
1.0Vp-p
Pattern generator
Video output
CN203
⑬ CAM Y
⑮ CAM GND
75Ω × 4
75Ω resistor
(Parts code: 1-247-804-11)

Adjusting method:

1) Set to the VIDEO input mode.
2) Set to the record mode.
3) Set data: 01 to page: 1, address: 00.
4) Set data: 00 to page: 2, address: 00.
   (Specification of category 00)
5) Set data: 04 to page: 2, address: B0.
6) After memorizing the data of address: 9A of page: 2, set data: 10 to the address.
7) After memorizing the data of address: 9D of page: 2, set data: 30 to the address.
8) Change the data of page: D, address: 71, and adjust the residual chroma component (A) to minimum.
9) Change the data of page: D, address: 84 so that the residual chroma component becomes minimum.
10) Repeat 8) and 9).
11) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set the data memorized at step 7) to address: 9D of page: 2.
2) Set the data memorized at step 6) to address: 9A of page: 2.
3) Set data: 00 to page: 2, address: B0.

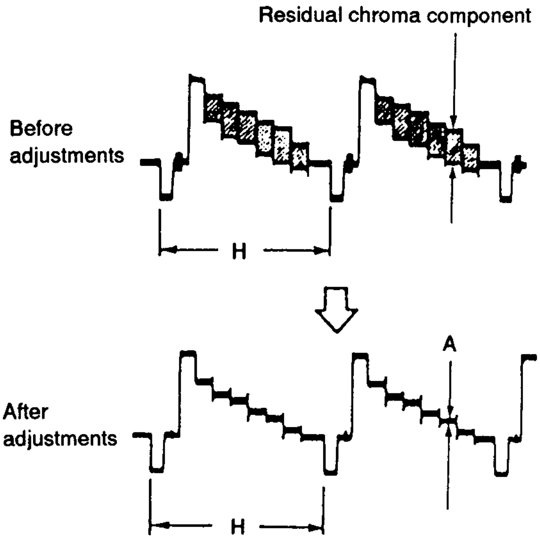

Residual chroma component
Before adjustments
H
A
After adjustments
H

Fig. 6-3-11.

2. Flying Erase Check (VS board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ⑫ of CN101 (FE (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: 8.0 ± 0.5 MHz Voltage: 6.0 ± 1 Vp-p (ME tape) Above 7.0 Vp-p (MP tape)

Checking method:

1) Check that the oscillation frequency and the oscillation voltage satisfieds the specified value.

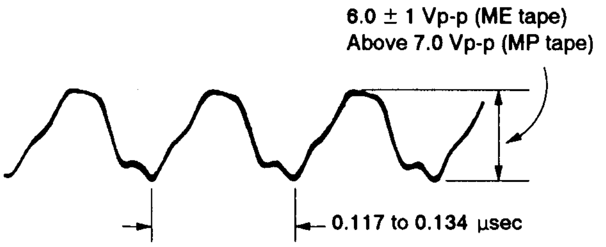


Fig. 6-3-8.

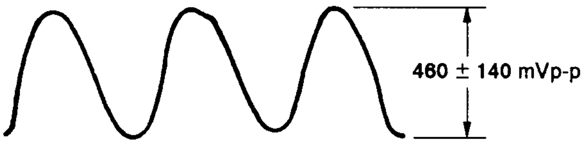
3. VXO Oscillation Frequency Check (VS board)

Mode	Record
Signal	Color bar
Measurement Point	Pin (61) of IC201
Measuring Instrument	Frequency counter
Specified Value	4433619 ± 50 Hz

Note: Connect the frequency counter via a high impedance (approximately 10 MΩ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of pin (61) of IC201 is 4433619 ± 50 Hz.



(4433619 ± 50Hz)

Fig. 6-3-9.

4. SYNC AGC Level Adjustment (VS board)

Adjust so that the Y signal level to be recorded becomes consistent.

Mode	Camera record
Signal	Color bar (Camera input) Note 1
Measurement Point	Pin ⑥ of CN201 (VIDEO I/O) Note 2
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	70
Specified Value	A=1.005 ± 0.010 V

Note 1: The chroma signal input is not required.

Note 2: Terminate the video out terminal at 75Ω .
75Ω resistor (Part code: 1-247-804-11)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 70, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

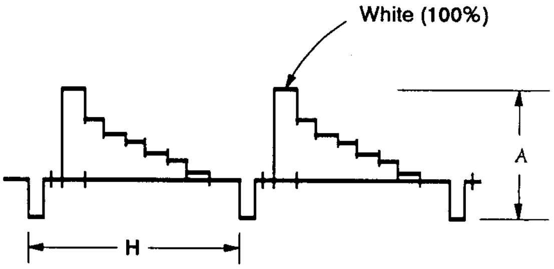


Fig. 6-3-10.

3-5. Standard 8 mm VIDEO SYSTEM ADJUSTMENTS

The adjustments of the video system must be performed according to the following adjustment procedure.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Figs. 6-3-2. and 6-3-3.

[Adjusting procedure]

1) Playback frequency characteristics adjustment
2) Flying erase check
3) VXO oscillation frequency check
4) SYNC AGC level adjustment
5) Comb filter adjustment
6) Emphasis input level adjustment
7) WHITE CLIP check
8) DARK CLIP check
9) DE EMPH level adjustment
10) PB Y out level adjustment
11) Y FM carrier frequency adjustment
12) Y FM deviation adjustment
13) Chroma emphasis adjustment 1
14) Chroma emphasis adjustment 2
15) Comb filter fine adjustment
16) REC Y level adjustment
17) REC L adjustment
18) REC CHROMA level adjustment
19) REC ATF level check

1. Playback Frequency Characteristic Adjustment (VS board)

Eliminate the differences in the head characteristics of each channel. If there are differences, flickers and over modulation noises will be produced.

Note 1: The adjusting element for CH2 is shown in parentheses [ ].

Mode	Playback
Signal	Alignment tape: For frequency characteristic adjustment (WR5-6C)
Measurement Point	CH1: Pin ③ of CN102 (PB RF) EXT TRIG: Pin ④ of CN102 (RF SWP)
Measuring Instrument	Oscilloscope TRIG SLOPE: +, [-]
Adjustment Page	D
Adjustment Address	5E [63]
Specified Value	3.58 MHz level: 5.5 MHz level= 4: (3 ± 0.3)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of address: 5E [63] of page D, and adjust the level ratio of 3.58 MHz and 5.5 MHz of PB RF output waveform to the specified value.

   Note 2: After each address adjustment, be sure to press the PAUSE button of the adjusting remote commander and memorize the data.

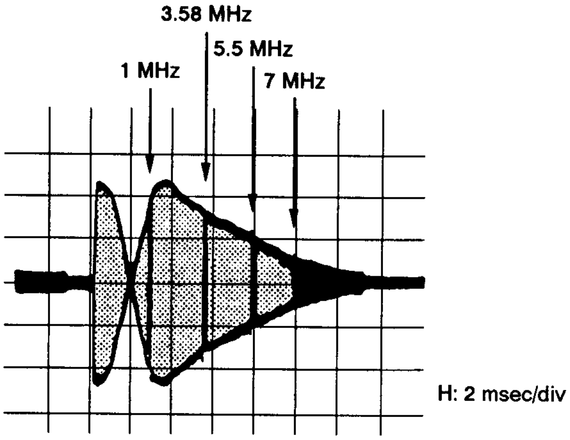


Fig. 6-3-7.

3. Battery Down Check

Mode	Camera record
Subject	Arbitrary

Connection

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 6-3-5.

Checking method:

Remove the adjusting remote commander, and perform the following check. If the check is not satisfied, perform from the beginning again.

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 6.3 ± 0.1 Vdc.
2) Set to the camera recording mode.
3) Check that the 🪫 mark on the EVF (viewfinder) display is not lighted up. (TALLY lamp lights up).
4) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.54 ± 0.01 Vdc.
5) Check that the 🪫 mark on the EVF display and the TALLY lamp blinks every second.
6) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.42 ± 0.01 Vdc.
7) Check that the 🪫 mark on the EVF display and the TALLY lamp are blinking faster, the VTR stops and the power supply turns off.

3-4. SERVO SYSTEM ADJUSTMENTS

1. Switching Position Adjustment (VS board)

Switching timing of video head setting. If deviated in this case causes switching noise or jitter on the played back screen.

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1CP)
Measurement Point	CH1: Pin ④ of CN102 (RF SWP) CH2: Pin ③ of CN102 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	04, 05
Specified Value	t=0 ± 10 μsec

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Set data: 0B to page: D, address: 05.
3) Change the data of page: D, address: 05 and minimize "t". (Coarse adjustment)
4) Change the data of page: D, address: 04, and adjust so that the switching position (t) becomes the specified value. (Fine adjustment)
5) Press the PAUSE button of the adjusting remote commander.

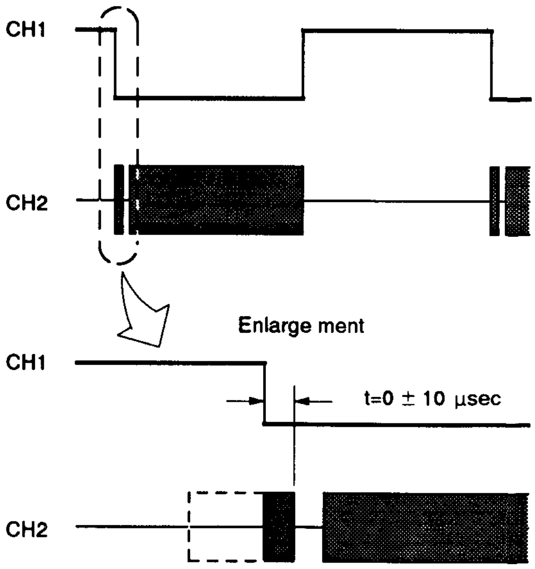


Fig. 6-3-6.

2. Battery End Adjustment

Set the battery end voltage.
If the voltage is incorrect, the life of the battery will shorten.
The image at the battery end will also be rough.

Mode	Camera record
Signal	Arbitrary
Measurement Point	LCD display of the adjusting remote control unit
Measuring Instrument	
Adjustment Page	D
Specified Value	06, 07, 08, 09, 0A

Connection:

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 6-3-5.

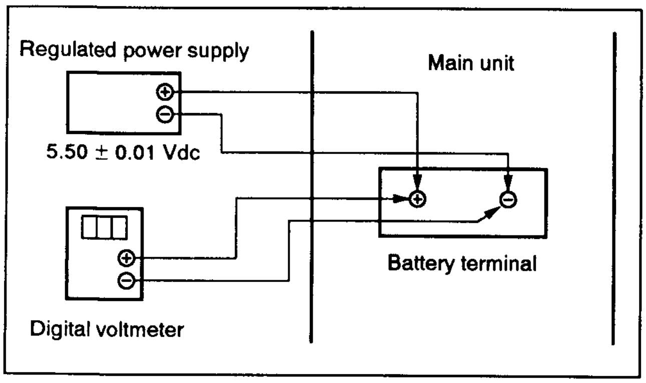


Fig. 6-3-5.

Adjusting method:

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.3 ± 0.1 Vdc.
2) Set data: 01 to page: 1, address: 00.
3) Decrease the output voltage of the regulated power supply so that the digital voltmeter display is 5.50 ± 0.01 Vdc.
4) Set data: 01 to page: 2, address: 00.
   (Specification of category 01)
5) Select page: 2, address: 47, read the adjusting remote commander display data, and this data is named D47.
6) Set data D47 to page: D, address: 06, and press the PAUSE button of the adjusting remote commander.
7) Convert D47 to decimal notation, and obtain D47′. (Refer to Table 6-1-3. "Hexadecimal notation–decimal notation conversion table")
8) Calculate D7′, D8′, D9′ and DA′ using following equations (decimal notation calculation).
   D7′=D47′+3
   D8′=D47′+8
   D9′=D47′+14
   DA′=D47′+18
9) Convert D7′, D8′, D9′ and DA′ to hexadecimal notation, and obtain D7, D8, D9 and DA.
10) Set data: D7′ to page: D, address: 07, and press the PAUSE button of the adjusting remote commander.
11) Set data: D8′ to page: D, address: 08, and press the PAUSE button.
12) Set data: D9′ to page: D, address: 09, and press the PAUSE button.
13) Set data: DA to page: D, address: 0A, and press the PAUSE button.
14) Perform "Battery Down Check".

3-2. POWER SYSTEM ADJUSTMENTS

1. Oscillator Frequency Check (DD board)

Mode	Camera record
Subject	Arbitrary
Measurement Point	Q905 collector
Measuring Instrument	Frequency counter
Specified Value	500 ± 50 kHz

Adjusting method:
1) Check that the oscillator frequency satisfies the specified value.

2. Power Voltage Check (DD board)

Mode	Camera record
Subject	Arbitrary
Measuring Instrument	Digital voltmeter
D5V check	
Measurement Point	Pin ㉙ of CN901
Specified Value	4.9 ± 0.1 Vdc
EVF5V check	
Measurement Point	Pin ㊴ of CN901
Specified Value	4.9 ± 0.1 Vdc
VID 5V check	
Measurement Point	Pins ㉓ and ㉔ of CN901
Specified Value	4.9 ± 0.1 Vdc
AU 5V check	
Measurement Point	Pin ㉟ of CN901
Specified Value	4.9 ± 0.1 Vdc
RP 5V check	
Measurement Point	Pin ⑳ of CN901
Specified Value	4.9 ± 0.1 Vdc
CAM5V check	
Measurement Point	Pins ㉕ and ㉖ of CN901
Specified Value	4.85 ± 0.1 Vdc
SS 3.6V check	
Measurement Point	Pin ㉝ of CN901
Specified Value	3.6 ± 0.1 Vdc
D3.6V check	
Measurement Point	Pins ㉑ and ㉒ of CN901
Specified Value	3.6 ± 0.1 Vdc
CAM 15V check	
Measurement Point	Pin ㉗ of CN901
Specified Value	15 ± 0.3 Vdc
CAM –8.5V check	
Measurement Point	Pin ㉛ of CN901
Specified Value	$-8.5^{+0.25}_{-0.4}$ Vdc
MT 5V check	
Measurement Point	Pins ⑨, ⑱ and ⑲ of CN901
Specified Value	5.0 ± 0.1 Vdc

3-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Page D Initial Value Input

If the page D data has been erased due to some cause, input the page D initial value before performing adjustments. For details on the initial value, refer to "Page D address list" in "3-1-8. Service Mode".

Mode	E-E
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	00 to 90, [B0 to BB], D4 to EF

[ ] : COLOR EVF model

Input method:
1) Set data: 01 to page: 1, address: 00.
2) Select page D, and input the initial value to each address.
(After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote commander before changing the address.)

Address	Adjustment data	
	Initial value	Memo column
58	70	70
59	85	85
5A	DD	
5B	DD	
5C	DD	
5D	DD	
5E	DD	
5F	D9	
60	D9	
61	D9	
62	D9	
63	D9	
64		
65		
66		
67		
68		
69	DF	DF
6A	DF	DF
6B	DF	DF
6C	DF	DF
6D	DF	DF
6E		
6F		
70	75	
71	80	
72	B0	B0
73	B0	B0
74	C2	
75	BE	
76	A7	
77	9E	
78	52	52
79	51	51
7A	7D	7D
7B	7D	7D
7C	45	45
7D	3A	3A
7E	62	62
7F	62	62
80	9E	
81	9E	
82	AC	
83	9E	

Table 6-3-3. (3)

Address	Adjustment data	
	Initial value	Memo column
84	9C	
85	A0	A0
86	A2	
87	94	
88	00	00
89	00	00
8A	00	00
8B	48	48
8C	AF	AF
8D	8B	
8E	77	77
8F	54	
90	60	60
91 to AF		
B0 Note 5	A0	
B1 Note 5	75	75
B2 Note 5	50	
B3 Note 5	7A	
B4 Note 5	6A	
B5 Note 5	70	
B6 Note 5	90	
B7 Note 5	35	
B8 Note 5	7A	7A
B9 Note 5	7A	7A
BA Note 5	70	70
BB Note 5	F0	F0
BC to E3		
E4	00	
E5	00	
E6	00	
E7	00	
E8	00	
E9	00	
EA	00	
EB	00	
EC	00	
ED	00	
EE	00	
EF	00	
F0	*6	
F1	*7	
F2 to FF		

Table 6-3-3. (4)

Address	Adjustment data	
	Initial value	Memo column
00		
01		
02	00	00
03	00	00
04	80	
05	0B	
06	66	
07	7F	
08	84	
09	8A	
0A	8E	
0B	00	00
0C		
0D		
0E		
0F		
10	00	00
11	00	00
12	00	00
13	00	00
14	75	75
15	57	57
16	01	01
17	*1	*1
18	*2	*2
19	00	00
1A	*3	*3
1B	*4	*4
1C	80	80
1D	01	01
1E	*5	*5
1F	80	80
20	2E	2E
21	08	08
22	29	29
23	03	03
24	0F	0F
25	F7	F7
26	1C	1C
27	25	25
28	A8	A8
29	A5	A5
2A	9C	9C
2B	9F	9F

Table 6-3-3. (1)

Address	Adjustment data	
	Initial value	Memo column
2C	A8	A8
2D	A9	A9
2E	9C	9C
2F	A5	A5
30	E8	
31	E8	
32	E8	
33	E8	
34	E8	
35	E8	
36	E8	
37	E8	
38	D8	
39	E1	
3A	D8	
3B	E1	
3C		
3D		
3E		
3F		
40	B9	
41	CD	
42	BE	
43	C7	
44	B9	
45	CD	
46	BE	
47	C7	
48		
49		
4A		
4B		
4C		
4D		
4E		
4F		
50	D3	D3
51	CE	CE
52		
53		
54	C2	C2
55	C2	C2
56	97	97
57	70	70

Table 6-3-3. (2)

Address	Adjustment data	
	Initial value	Memo column
84	80	
85	61	61
86	00	00
87	61	
88	BA	
89	BA	
8A	00	00
8B	48	48
8C	AF	
8D	8B	
8E	77	
8F	54	
90	60	60
91 to AF		
B0 Note 5	A0	
B1 Note 5	75	75
B2 Note 5	50	
B3 Note 5	7A	
B4 Note 5	6A	
B5 Note 5	70	
B6 Note 5	90	
B7 Note 5	35	
B8 Note 5	7A	7A
B9 Note 5	7A	7A
BA Note 5	70	70
BB Note 5	F0	F0
BC to E3		
E4	00	
E5	00	
E6	00	
E7	00	
E8	00	
E9	00	
EA	00	
EB	00	
EC	00	
ED	00	
EE	00	
EF	00	
F0		
F1 to FF		

Table 6-3-2. (4)

15. Page D address list for Hi8 model

Note 1: The adjustment data initial value is the data input before performing video section adjustments (Page D) if the Page D data has been erased due to some reason.

Note 2: The data written in the adjustment data memo column are fixed.
After adjusting, check that these data have not been rewritten by mistake.

Note 3: In some case, data have been input to the page D address 91 to AF, BC to E3 and F0 to FF. This has no relation to the adjustment.

Note 4: *1 : 06 (TYPE F/TYPE G)
17 (TYPE H)
*2 : C8 (TYPE F)
E8 (TYPE G/TYPE H)
*3 : DC (TYPE F/TYPE G)
FC (TYPE H)
*4 : 61 (TYPE F/TYPE G)
69 (TYPE H)
*5 : 06 (TYPE F)
07 (TYPE G)
48 (TYPE H)
*6 : 40 (TYPE F)
42 (TYPE G)
44 (TYPE H)
*7 : F2 (TYPE F/TYPE G)
F4 (TYPE H)

Note 5: TYPE H

Address	Adjustment data	
	Initial value	Memo column
2C	A8	A8
2D	A8	A8
2E	AC	AC
2F	AC	AC
30	E5	E5
31	E5	E5
32	E5	
33	E5	
34	E5	
35	E5	
36	E5	
37	E5	
38	E1	
39	D8	
3A	E1	
3B	D8	
3C		
3D		
3E		
3F		
40		
41		
42	AE	
43	AE	
44		
45		
46	AE	
47	AE	
48		
49		
4A		
4B		
4C		
4D		
4E		
4F		
50	A2	A2
51	A1	A1
52		
53		
54	00	00
55	00	00
56	90	90
57	00	00

Table 6-3-2. (2)

Address	Adjustment data	
	Initial value	Memo column
58	00	00
59	75	75
5A	D8	D8
5B	D8	D8
5C	D8	D8
5D	D8	D8
5E	D8	
5F	C8	C8
60	C8	C8
61	C8	C8
62	C8	C8
63	C8	
64		
65		
66		
67		
68		
69	DF	DF
6A	DF	DF
6B	DF	DF
6C	DF	DF
6D	DF	DF
6E		
6F		
70	69	
71	72	
72	B0	B0
73	B0	B0
74		
75	C1	
76		
77	8B	
78	00	00
79	00	00
7A	7C	7C
7B	7C	7C
7C	00	00
7D	00	00
7E	60	60
7F	60	60
80	9F	
81	9F	
82	B1	
83	C6	

Table 6-3-2. (3)

14. Page D address list for standard 8 mm model

Note 1: The adjustment data initial value is the data input before performing video section adjustments (Page D) if the Page D data has been erased due to some reason.

Note 2: The data written in the adjustment data memo column are fixed.
After adjusting, check that these data have not been rewritten by mistake.

Note 3: In some case, data have been input to the page D address 91 to AF, BC to E3 and F0 to FF. This has no relation to the adjustment.

Note 4: *1 Address: 17
Data: 06 (TYPE B)
07 (TYPE A/TYPE C/TYPE D/TYPE E)
*2 Address: 18
Data: 00 (TYPE A)
60 (TYPE B/TYPE C/TYPE D/TYPE E)
*3 Address: 1A
Data: DC (TYPE B)
FC (TYPE A/TYPE C/TYPE D/TYPE E)
*4 Address: 1B
Data: 61 (TYPE A/TYPE B/TYPE C)
69 (TYPE D/TYPE E)
*5 Address: 1E
Data: 04 (TYPE A)
05 (TYPE B)
45 (TYPE C)
46 (TYPE D)
76 (TYPE E)
*6 Address: 1F
Data: 70 (TYPE D/TYPE E)
80 (TYPE A/TYPE B/TYPE C)
*7 Address: 20
Data: 2E (TYPE B/TYPE C/TYPE D/TYPE E)

Note 5: TYPE D/TYPE E

Address	Adjustment data	
	Initial value	Memo column
00		
01		
02	00	00
03	00	00
04	80	
05	0B	
06	66	
07	7F	
08	84	
09	8A	
0A	8E	
0B	00	00
0C		
0D		
0E		
0F		
10	00	00
11	00	00
12	00	00
13	00	00
14	B6	B6
15	98	98
16	01	01
17	*1	*1
18	*2	*2
19	00	00
1A	*3	*3
1B	*4	*4
1C	80	80
1D	01	01
1E	*5	*5
1F	*6	*6
20	*7	*7
21	08	08
22	29	29
23	00	00
24	33	33
25	33	33
26	28	28
27	28	28
28	A8	A8
29	A8	A8
2A	AC	AC
2B	AC	AC

Table 6-3-2. (1)

11. Tape top/end sensor check

Page 3	Address 0A

Display Data	Tape Top/End Sensor Condition
00	Tape present (Middle of tape)
01	Tape end
10	Tape top
11	No tape

Tape end sensor condition
Tape top sensor condition

"0"=Non active (Not receiving light)
"1"=Active (Receiving light)

Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Preparation
2	3	0E	10	Request for tape top/end sampling operations
3	3	0A		The condition of the tape top/end sensor can be discriminated by the display data.

12. Version of mechanical control microprocessor

Page 3	Address 0B

Display Data	Microprocessor version
01	Version 1

Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Preparation
2	3	0B		The microprocessor version can be discriminated by the display data.

13. Drum Running Time

Page 3	Address 02, 03

Using method:

Order	Page	Address	Data	Procedure
1	0	02		Drum running hour (decimal lower)
2	0	03		Drum running hour (decimal higher)

The data is retained by lithium battery. (Not EEPROM)
The data is counted up 0 hour to 9999 hour.

10. Mode switch and CC DOWN switch check

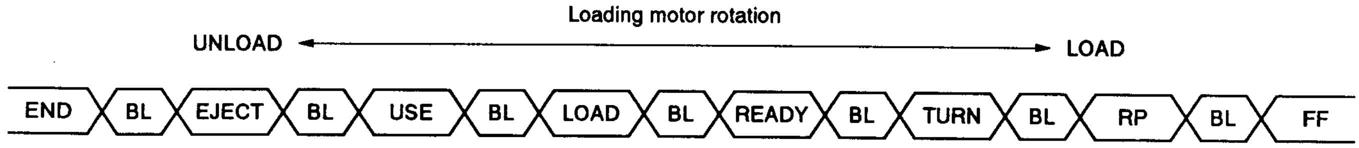
The mode switch position (mechanical section condition) can be checked.

Page 3	Address E9

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
MSW 2	MSW 1	MSW 0	CC DOWN				

				DATA	POSITION	FUNCTION
0	0	0	0/1	E*/F*	BL	Interval of each position
0	1	1	1	7*	END	FULL END processing (T side lock removal)
0	0	1	1	3*	EJECT	Cassette compartment ejection
1	0	1	1	B*	USE	EJECTED (Unskate end)
0	0	1	0	2*	LOAD	LOADING (Skate in)
1	0	0	0	8*	READY	NORMAL STOP position
1	1	0	0	C*	TURN	OFF of pinch roller only with STOP ↔ FF/REW (oscillating position)
0	1	0	0	4*	RP	PB, REC, RVS, REV, CUE
0	0	0	0	0*	FF	FF/REW

*: Don't care


Loading motor rotation
UNLOAD
LOAD
END
BL
EJECT
BL
USE
BL
LOAD
BL
READY
BL
TURN
BL
RP
BL
FF

Using method:

Order	Page	Address	Data	Procedure
1	3	00	00	Preparation
2	3	E9		The mode switch position and CC DOWN switch condition can be discriminated by the display data.

8. Tape top/end sensor check

Page 3	Address 0A

Display Data	Tape Top/End Sensor Condition
00	Tape present (Middle of tape)
01	Tape end
10	Tape top
11	No tape

Tape end sensor condition
Tape top sensor condition

"0"=Non active (Not receiving light)
"1"=Active (Receiving light)

Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Preparation
2	3	0E	10	Preparation
3	3	0A		The condition of the tape top/end sensor can be discriminated by the display data.

9. Version of mechanical control microprocessor

Page 3	Address 0B

Display Data	Microprocessor version
01	Version 1

Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Preparation
2	3	0B		The microprocessor version can be discriminated by the display data.

7. Mode switch and CC DOWN switch check

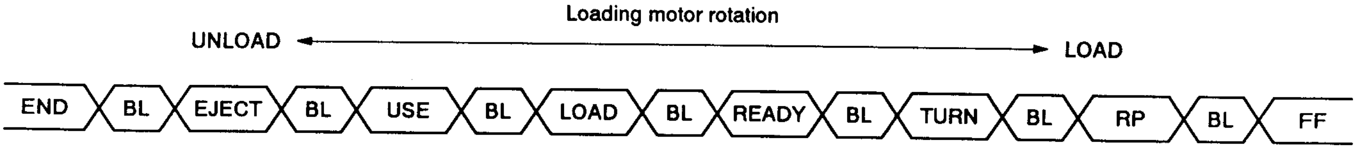
The mode switch position (mechanical section condition) can be checked.

Page 3	Address E9

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
MSW 2	MSW 1	MSW 0	CC DOWN				

				DATA	POSITION	FUNCTION
0	0	0	0/1	E*/F*	BL	Interval of each position
0	1	1	1	7*	END	FULL END processing (T side lock removal)
0	0	1	1	3*	EJECT	Cassette compartment ejection
1	0	1	1	B*	USE	EJECTED (Unskate end)
0	0	1	0	2*	LOAD	LOADING (Skate in)
1	0	0	0	8*	READY	NORMAL STOP position
1	1	0	0	C*	TURN	OFF of pinch roller only with STOP↔FF/REW (oscillating position)
0	1	0	0	4*	RP	PB, REC, RVS, REV, CUE
0	0	0	0	0*	FF	FF/REW

*: Don't care


Loading motor rotation
UNLOAD
LOAD
END
BL
EJECT
BL
USE
BL
LOAD
BL
READY
BL
TURN
BL
RP
BL
FF

Using method:

Order	Page	Address	Data	Procedure
1	3	00	00	Preparation
2	3	E9		The mode switch position and CC DOWN switch condition can be discriminated by the display data.

6. Mechanism controller input/output check

Page 2	Address 83

Bit	IN/OUT Signal	Condition
0		
1	E/L DET	"1"=Hi8, "0"=Normal
2	SP/LP DET	"1"=SP, "0"=LP
3	CLOG DET	"1"=Clog detected, "0"=Others
4	REC PROOF	"1"=Recording prohibited, "0"=Recording possible
5	TAPE PREEND	"1"=Tape preend, "0"=Others
6	DEW DET	"0"=Condensation occured, "1"=Others
7	CASSETTE IN	"0"=No cassette

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Preparation
2	2	83		The condition of each input signal can be discriminated by differentiating the bit value of the display data.

Page 2	Address 84

Bit	IN/OUT Signal	Condition
0	VA PB MODE	"1"=PB, "0"=REC
1	RP PB MODE	"1"=PB, "0"=REC
2	JOG	"1"=Variable speed playback, "0"=Others
3	ME/MP SW	"1"=ME tape, "0"=Other tape
4	Hi8 MP SW	"1"=Hi8 MP tape, "0"=Other tape
5	SERVO OPERATION	"1"=SP mode, "0"=LP mode
6	VIDEO MUTE	"1"=Mute, "0"=Video output
7	AUDIO MUTE	"1"=Mute, "0"=Audio output

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Preparation
2	2	84		The condition of each signal can be discriminated by differentiating the bit value of the display data.

5. Battery voltage check

Page 2	Address 47

Display Data	Battery Voltage
F0	Approx. 10.6 Vdc
E0	Approx. 9.9 Vdc
D0	Approx. 9.2 Vdc
C0	Approx. 8.5 Vdc
B0	Approx. 7.8 Vdc
A0	Approx. 7.1 Vdc
90	Approx. 6.4 Vdc
80	Approx. 5.7 Vdc
70	Approx. 5.0 Vdc

Using method:

Order	Page	Address	Data	Procedure
1	2	00	01	Preparation
2	2	47		The battery voltage can be discriminated by the display data.

* Voltage measurement accuracy is approx. ± 10%.

3. Emergency mode

The operation mode can be checked during faults.

Page D	Address E5

Last emergency mode

……The operation mode when the last error is generated
(This data will be renewed each time an error occurs.)

Page D	Address E9

2nd emergency mode

……The operation mode when the 2nd error is generated

Page D	Address ED

First emergency mode

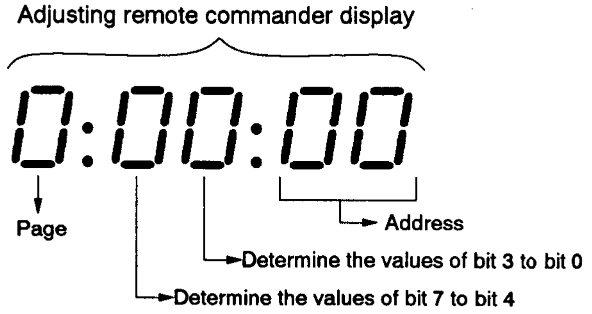
……The operation mode when the first error is generated

- * Be sure to rewrite the data of addresses E5, E9 and ED to 00 after repairs/adjustments.
- * When rewriting the data, be sure to press the PAUSE button of the adjusting remote commander after setting the data.

Code	Error Conditions
00	BEFOR INITIALIZE
01	EJECTED
02	NORMAL STOP
03	FF
04	NORMAL REC
06	NORMAL PB
07	PB PAUSE
12	LOADING
14	REC PAUSE
26	X1
27	1/5 SLOW
31	UNLOADING
46	CUE
56	REVIEW
62	STOP TAPE END
66	X2
67	FRAME
72	STOP TAPE TOP
83	REWIND
85	REC REVIEW (+)
95	REC REVIEW (–)
97	-PB PAUSE
A2	EMERGENCY LOADING
A5	EDIT SEARCH (+)
B1	EMERGENCY UNLOADING
B2	STOP EMERGENCY 1
B5	EDIT SEARCH (–)
C2	STOP EMERGENCY 2
E2	STOP NO CASSETTE
F5	EDIT PAUSE

4. Bit value discrimination

Bit values must be discriminated using the display data of the adjusting remote commander for the following items. Use the table below to discriminate if the bit value is "1" or "0".


Adjusting remote commander display
0:00:00
Page
Address
Determine the values of bit 3 to bit 0
Determine the values of bit 7 to bit 4

	Remote controller display	Bit value			
		bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ→	8	1	0	0	0
	9	1	0	0	1
	A(A)	1	0	1	0
	B(b)	1	0	1	1
	C(c)	1	1	0	0
	D(d)	1	1	0	1
Ⓑ→	E(E)	1	1	1	0
	F(F)	1	1	1	1

(Example) If the remote commander display data is "8E", bit values from bit7 to bit4 can be discriminated from column Ⓐ, and those from bit3 to bit0 from column Ⓑ.

3-1-8. Service Mode

Note: After the completion of the all adjustments, cancell the service mode by either of the following ways.

1) Unplug the main power supply and remove the lithium battery. (In this case, date and time and menu setting have been set by users are canceled. Perform resetting.)
2) Return data of the address: 00 on page: 1 to 00. And when data on page: 2 is changed, return the data to the original condition.

1. Test mode setting

Set/release each test mode. Set data: 01 to page: 1, address: 00, before setting the data.

Page D	Address 02

Data	Function
00	Normal
01	Test mode 1 Various emergency prohibitions and releases Drum, capstan, loading motor, reel, tape top and end, DEW SP/LP automatic discrimination prohibition, manual switching, 5 minutes pause release prohibition Power off prohibition/release by battery end

Page D	Address 03

Data	Function
00	Normal
01	Camera power ON
02	VTR power ON
03	Camera + VTR power ON

- * For page D, the data set will be recorded in the nonvolatile memory by pressing the PAUSE button on the adjusting remote commander. Take note that, in this case, the test mode will not be released even if the main power has been turned off (6.3 Vdc).
- * Be sure to return this address data to 00 after completing adjustments/repairs and press the PAUSE button of the adjusting remote commander.

2. Emergency code

Fault (error) symptoms can be checked.

Page D	Address E4

Last emergency code
……Last error code generated (This data will be renewed each time an error occurs.)

Page D	Address E8

2nd emergency code
……2nd error code generated

Page D	Address EC

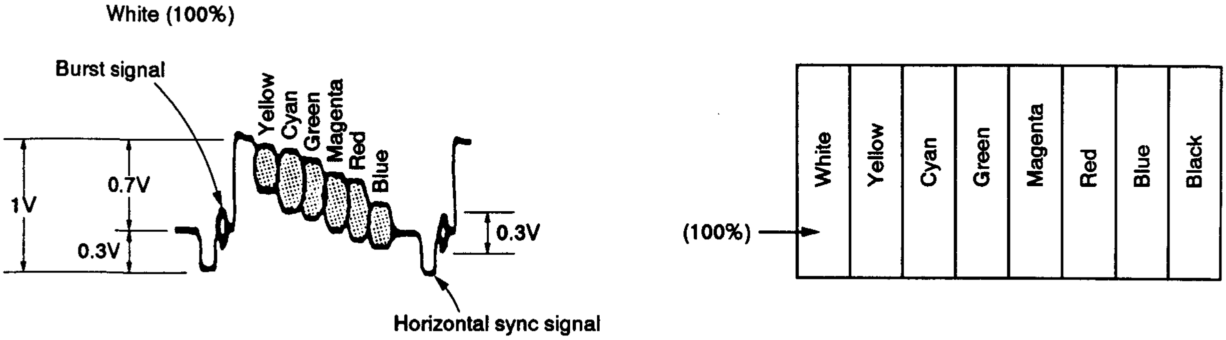
First emergency code
……First error code generated

- * Be sure to rewrite the data of addresses E4, E8 and EC to 00 after repairs/adjustments.
- * When rewriting the data, be sure to press the PAUSE button of the remote commander after setting the data.

Code	Error Condition
00	No error
01	Loading motor error
02	Reel error during unloading
03	Reel errors at other times
04	Capstan error
05	FG error during drum start up
06	PG error during drum start up
07	FG error during normal drum conditions
08	PG error during normal drum conditions
09	Phase error during normal drum conditions

Fig. 6-3-4. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the video output terminal (Terminated at 75 Ω)


White (100%)
Burst signal
Yellow
Cyan
Green
Magenta
Red
Blue
1V
0.7V
0.3V
0.3V
Horizontal sync signal
(100%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Black

Color bar signal waveform

Color bar pattern

Fig. 6-3-4. Color Bar Signals of the Alignment Tape

3-1-7. Input/Output Level and Impedance

1. STANDARD 8 model

Video output	Phono jack, 1 Vp-p, 75Ω , unbalanced, sync negative
Audio output	Phono jack, –7.5 dBs, (at load impedance 47 kΩ) impedance less than 2.2 kΩ

2. Hi 8 model

S video input/output	4-pin mini DIN, Luminance signal: 1 Vp-p, 75Ω , unbalanced, sync negative Chrominance signal: 0.286 Vp-p, 75Ω , unbalanced
Video input/output	Phono jack, 1 Vp-p, 75Ω , unbalanced, sync negative
Audio input/output	Phono jack, Input: –7.5 dBs, input impedance more than 47 kΩ Output: –7.5 dBs, (at load impedance 47 kΩ), impedance less than 2.2 kΩ

3-1-6. Alignment Tape

The following table lists alignment tapes which are available. Use the tape specified in the signal column for each adjustment.

If the type of tape to be used for checking operations is not specified, use whichever type.

Name	**Record-ing mode**	**Tape type**	**Tape speed**	**Recording contents**		**Usage**
				Video area	**PCM area**	
Tracking WR5-1CP	Standard 8 mm	MP	SP	CH2: Signal for 1 MHz tape path adjustment		Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-7CE	Hi8	ME	LP	RF sweep 0 to 15 MHz Marker 2, 4.5, 7, 8.5, 10 MHz		Frequency characteristics adjustment
Video frequency characteristics WR5-2C	Standard 8 mm	MP	LP	RF sweep Marker 1, 3.58, 5.5, 7 MHz		
Operation check (SP mode) WR5-5CSP	Standard 8 mm	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation	• Audio signal (PCM) Monoscope section 20 Hz 20 sec. 400 Hz 20 sec. 14 kHz 20 sec. Repeated 4 times Color bar section 1 kHz 4 minutes	Checking operations
Operation check WR5-8CSE	Hi8	ME	SP		• Audio signal (PCM) 400 Hz	
Operation check WR5-4CL	Standard 8 mm	MP	LP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation		
Operation check WR5-8CLE	Hi8	ME	LP		• Audio signal (PCM) 400 Hz	
AFM stereo Operation check WR5-9CS	Standard 8 mm	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) Stereo section (color bar) Lch: 400 Hz, Rch: 1 kHz (L+R: 1.5 MHz ± 60 kHz DEV L–R: 1.7 MHz ± 30 kHz DEV) Bilingual section (Monoscope) Main: 400 Hz (1.5 MHz ± 60 kHz DEV) Sub: 1 kHz (1.7 MHz ± 30 kHz DEV)	• Audio signal (PCM) 400 Hz 8 minutes	AFM stereo Checking operations
BPF adjustment WR5-11CS	Standard 8 mm	MP	SP	• Video signal Color bar • Audio signal Main: 1 kHz (1.5 MHz ± 100 kHz DEV) Sub: 1 kHz (1.7 MHz ± 50 kHz DEV)		BPF Adjustment

Tape type

MP············ Particle type metal tape

ME············ Evaporated type metal type

Table 6-3-1.

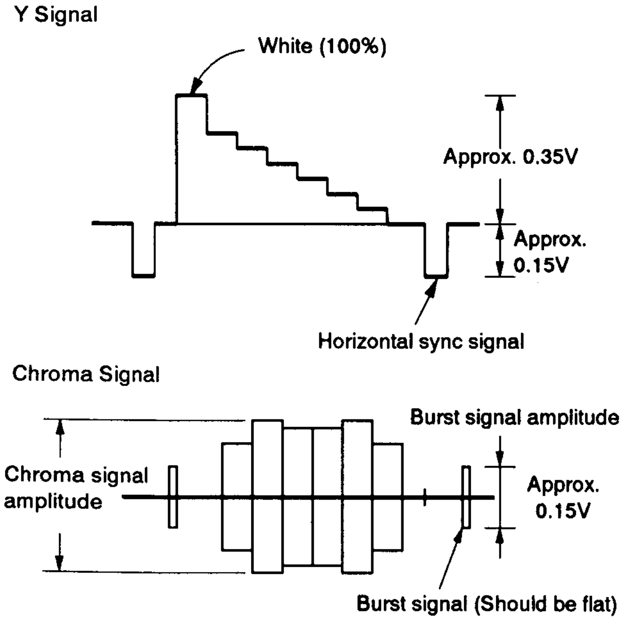
3-1-5. Checking the Input Signals

Because the video signal obtained from the pattern generator is used as the adjustment signal for adjusting the VTR section, the video output signal must satisfy the given specifications.

1. CAMERA Input

Connect the oscilloscope to Pin ⑬ of CN203 on VS board, and check that the sync signal of the Y signal is approximately 0.15 Vp-p and that the amplitude of the video section is approximately 0.35 Vp-p. (When a VTR with the S VIDEO output terminal is used, also check that the chroma signal and burst signal have not remained.) Connect the oscilloscope to Pin ⑰ of CN203 on VS board, and check that the burst signal amplitude of the chroma signal is approximately 0.15 Vp-p and flat, and that the amplitude ratio of the burst signal to the chroma signal is 0.30:0.66. The Y and chroma signals used in the adjustment are shown in Fig. 6-3-2.

Note: Be sure to check in the recording mode.


Y Signal
White (100%)
Approx. 0.35V
Approx. 0.15V
Horizontal sync signal
Chroma Signal
Burst signal amplitude
Chroma signal amplitude
Approx. 0.15V
Burst signal (Should be flat)

Burst amplitude: Chroma amplitude=0.30:0.66

Fig. 6-3-2. Color Bar Signal of Pattern Generator

2. VIDEO Input

Connect the oscilloscope to the video input/output terminal, and check that the sync signal amplitude of the video signal is approximately 0.3V, the amplitude of the video section is approximately 0.7V, the amplitude of the burst signal is approximately 0.3V and flat, and that the level ratio of the burst signal to the "red" signal is 0.30:0.66.

The video signal (color bar) used for adjusting the VTR section is shown in Fig. 6-3-3.

Note: Be sure to check in the record mode.

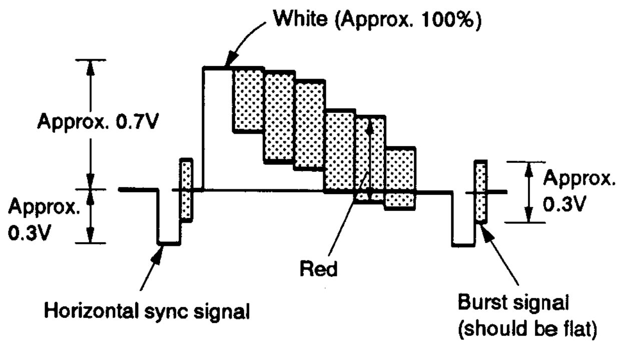
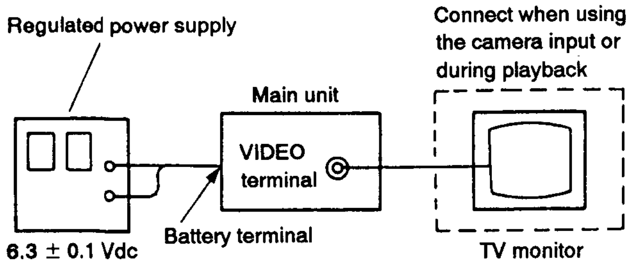

White (Approx. 100%)
Approx. 0.7V
Approx. 0.3V
Approx. 0.3V
Red
Horizontal sync signal
Burst signal (should be flat)

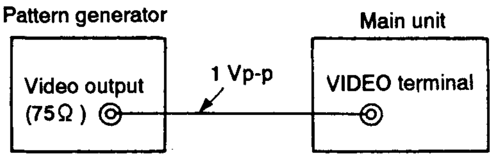
Fig. 6-3-3. Color Bar Signal of Pattern Generator

Connecting the TV monitor and regulated power supply


Regulated power supply
Connect when using the camera input or during playback
Main unit
VIDEO terminal
Battery terminal
6.3 ± 0.1 Vdc
TV monitor

Connecting the pattern generator

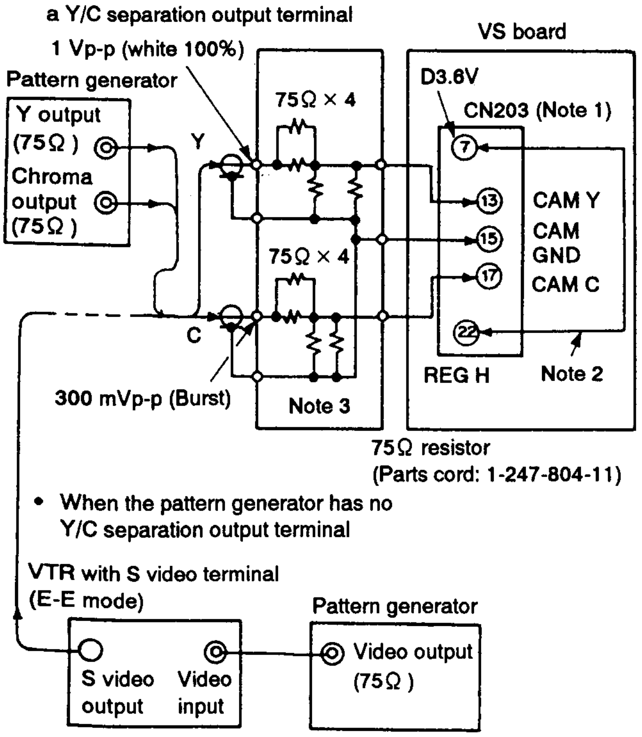
[VIDEO Input]
Set the power supply switch to "PLAYER" or set the "forcible VTR power supply ON mode" using the adjusting remote commander.


Pattern generator
Main unit
Video output (75Ω)
1 Vp-p
VIDEO terminal

Note: The TV monitor cannot be connected.
Use the view finder to monitor.

[CAMERA Input]
Set the power supply switch to "CAMERA" or set the "forcible camera+VTR power supply ON mode" using the adjusting remote commander.

- When the pattern generator has a Y/C separation output terminal


1 Vp-p (white 100%)
Pattern generator
Y output (75Ω)
Chroma output (75Ω)
Y
C
75Ω × 4
75Ω × 4
300 mVp-p (Burst)
Note 3
VS board
D3.6V
CN203 (Note 1)
7
13
15
17
22
CAM Y
CAM GND
CAM C
REG H
Note 2
75Ω resistor
(Parts cord: 1-247-804-11)
VTR with S video terminal
(E-E mode)
S video output
Video input
Pattern generator
Video output (75Ω)

- When the pattern generator has no Y/C separation output terminal

Note 1: Remove the VC board.
Note 2: Connect Pins ⑦ and ㉒ of CN203 with the jumper wire.
Note 3: The chroma signal input is not required for some adjustments.

Fig. 6-3-1.

3-1-4. How to Set the REC Mode in the Model without REC switch (Without LINE-IN model)

1) REC key forbidden accept mode cancel
   1. Connect the adjusting remote commander to the remote terminal.
   2. Turn on the power.
   3. Turn on the HOLD switch of the adjusting remote commander.
   4. Select the page: 1 address: 00, and set the data to 01.
   5. Select the page: D address: 17, and set the data to 16 [17].$^{\text{Note 1}}$
   6. Press PAUSE button on the adjusting remote commander. (Write to the non-volatile memory)

The REC key is accepted through the above procedure.

2) REC mode setting
   1. Turn off the HOLD switch of the adjusting remote command-er.
   2. Press REC buttons of the adjusting remote commander.
   3. Perform "3. Procedure after completed the adjustment", after completing adjustment.

3) Procedure after completed the adjustment
   Be sure to return the mode to REC key forbidden accept mode after adjustment.
   1. Connect the adjusting remoter controller.
   2. Turn on the power.
   3. Turn on HOLD switch of the adjusting remote commander.
   4. Select the page: 1 address: 00, and set the data to 01.
   5. Select the page: D address: 17, and set the data to 06 [07].$^{\text{Note 1}}$
   6. Press PAUSE button on the adjusting remote commander. (Write to the non-volatile memory)
   7. Turn off the power.

Note 1: No mark : AEP, UK model
[ ] : E, Australian, Hong Kong model

5) The lens block and VC board are not used for video adjustments. Disconnect the following connectors in these adjustments.
   1. CN203 of the VS board (42P, 0.8 mm)
   2. CN775 of the VC board (8P, 0.8 mm)
      (TYPE D/TYPE H)

   Connect the following when removing the VC board.
   1. Connect Pin ㉒ (REG H) and Pin ⑦ (D3.6V) of CN203 of the VS board with a jumper wire.

   When connecting the VC board using the extension cord, use the following type.
   1. J-6082-285-A (42P, 0.8 mm)
6) The audio board (AU board) is required only for audio adjustments. When not using it, disconnect the following connector.
   1. CN202 of the VS board

   When connecting the AU board using the extension cord, use the following type.
   1. J-6082-286-A (34P, 0.8 mm)
7) When opening the VS board, disconnect the following connectors.
   1. CN502 of the VS board (9P, 0.8 mm)

   The VTR function keys will not work. Use the remote commander to perform operations other than EJECT.
   When connecting the FK and CN502 of VS board using the extension cord, use the following type.
   1. J-6082-288-A (9P, 0.8 mm)

   When connecting the CN1502 of PJ board and CN204 of VS board using the extension cord, use the following type.
   1. J-6082-287-A (12P, 0.8 mm)

Note 1: Setting the "forcible VTR power supply ON mode (VIDEO input mode)"
1) Set data: 01 to page: 1, address: 00.
2) Set data: 02 to page: D, address: 03 and press the PAUSE button of the adjusting remote commander.

By performing the above, the VTR can be operated with the cabinet (R) removed. After completing adjustments, be sure to exit the "forcible power supply ON mode".

Note 2: Setting the "forcible camera+VTR power supply ON mode (camera input mode)"
1) Set data: 01 to page: 1, address: 00.
2) Set data: 03 to page: D, address: 03 and press the PAUSE button of the adjusting remote commander.

By performing the above, the VTR can be operated with the cabinet (R) removed. After completing adjustments, be sure to exit the "forcible power supply ON mode".

Note 3: Exiting the "forcible power supply ON mode"
1) Set data: 01 to page: 1, address: 00.
2) Set data: 00 to page: D, address: 03 and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 1, address: 00.

3-1-3. Connecting the Equipments

Connect the measuring instruments as shown in Fig. 6-3-1. according to the input terminal specifications (VIDEO input or CAMERA input), and perform the adjustments.
The input terminal is specified in the ( ) in the signal column. Either input terminal can be used when there are no specifications.

Note 1: If the VIDEO input is used for the adjustments which specify for the CAMERA input to be used, the product specifications of the unit may not be satisfied in some cases. Be sure to perform according to the specifications.

Note 2: When adjustments are performed with the S video output terminal VTR as the signal source, the efficiencies of the unit may be affected by VTR. It is recommendet that a pattern generator with a Y/C separation output terminal be used as much as possible.

6-3. VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 6–84.

3-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

3-1-1. Equipments to be Used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape
    - For tracking adjustment (WR5-1CP)
      Part Code: 8-967-995-07
    - For Hi8 mode video frequency characteristics adjustment (WR5-7CE)
      Part Code: 8-967-995-18
    - For checking Standard 8 mm mode operations
      For SP (WR5-5CSP)
      Part Code: 8-967-995-47
      Or (WR5-4CSP)
      Part Code: 8-967-995-46
      For LP (WR5-4CL)
      Part Code: 8-967-995-56
      For checking AFM stereo operations (WR5-9CS)
      Part Code: 8-967-995-28
      For BPF adjustment (WR5-11CS)
      Part Code: 8-967-995-76
    - For checking Hi8 mode operations (ME tape)
      For SP (WR5-8CSE)
      Part Code: 8-967-995-48
      For LP (WR5-8CLE)
      Part Code: 8-967-995-57
12) remote commander for adjustment (J-6082-053-A)
13) VC board extension cord (42P, 0.8 mm)
    Part Code: J-6082-285-A
14) Control switch Block (FK) extension cord (9P, 0.8 mm)
    Part Code: J-6082-288-A
15) Control switch Block (CK) extension cord (18P, 0.8 mm)
    Part Code: J-6082-289-A
16) AU-184 board extension cord (34P, 0.8 mm)
    Part Code: J-6082-286-A
17) PJ board extension cord (12P, 0.8 mm)
    Part Code: J-6082-287-A

3-1-2. Adjusting Precautions

1) The adjustment for this unit is performed using the VIDEO input (VIDEO terminal input) or the camera input. The camera input can be used for video adjustments only. Use the VIDEO input for the other adjustments.

   When using the VIDEO input, set the power supply switch to "PLAYER" or set the "forcible VTR power supply ON mode" using the adjusting remote commander. (Note 1).

   When using the camera input, set the power supply switch to "CAMERA" or set the "Forcible camera+VTR power supply ON mode" using the adjusting remote commander (Note 2).

   After completing adjustments, be sure to exit the "forcible VTR power supply ON mode" or "forcible camera+VTR power supply ON mode" (Note 3).
2) The F panel block (MA board) is not used for video adjustments. Disconnect the following connectors in these adjustments.
   1. CN1301 of the AU board
3) The view finder (VF board) is not used for video adjustments. Disconnect the following connector in these adjustments.
   1. CN206 of the VS board (4P, 0.5 mm)
4) The cabinet (R) (CK: Power supply switch, camera function switch) need not be connected if the "forcible VTR power supply ON mode" or "forcible camera+VTR power supply ON mode" is set. In this case, disconnect the following connectors.
   1. CN503 of the VS board (18P, 0.8 mm)
   2. CN101 of the ZB board (4P, 0.8 mm)
   3. CN501 of the VS board (24P, 0.8 mm)

   However, as disconnecting these connectors means disconnecting the 3V lithium power supply, data set by the user such as the date, time, and menu will be lost. After completing the adjustments, set these data again, and be sure to exit the "forcible VTR power supply ON mode" or "forcible camera+VTR power supply ON mode". (Note 3)

   When connecting the cabinet (R) using the extension cord, use the following type.
   1. J-6082-289-A (18P, 0.8 mm)

6-2. MECHANICAL SECTION ADJUSTMENTS

Mechanism Parts Adjustments

For details on the adjustments and checks of mechanical section and replacements of mechanism parts, refer to the separate volume-"8 mm Video Mechanism Adjustment Manual IV A Mechanism".

2-1. OPERATING WITHOUT A CASSETTE

1) Refer to "2. DISASSEMBLY" and supply the power with the cabinet removed. (So that the mechanical deck can be operated.)
2) Connect the adjusting remote commander to the remote terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Close the cassette compartment without loading a cassette and complete loading.
5) Set data: 01 to page: 1, address: 00.
6) Set data: 01 to page: D, address: 02, and press the PAUSE button of the adjusting remote commander.
7) Set data: 04 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.

By carrying out the above procedure, the unit can be operated without loading a cassette.

Be sure to carry out "Processing after Operations" after checking the operations.

Set the data of page: D, address: 03 to the following if the sensor ineffective mode, forced VTR power supply ON mode or forced camera power supply ON mode are to be used together.

Forced VTR power supply ON mode·········· 06
Forced camera power supply ON mode······ 05

[Processing after Operations]

1) Set data: 01 to page: 1, address: 00.
2) Set data: 00 to page D, address: 02, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 1, address: 00.
5) Disconnect the power supply of the unit.

2-2. TAPE PATH ADJUSTMENT

1. Preparations for adjustments

1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller).
2) Connect the adjusting remote commander to the remote terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Select page: 1, address: 00, and set data: 01.
5) Select page: D, address: 02, and set data: 03.
   (Set the track shift mode. The adjusting remote commander can be disconnected if its PAUSE button of remote commander is pressed. In this case, be sure to perform "Processing after operations" after completing adjustments.)
6) Select page: D, address: 16, and set data 05.
7) Connect the oscilloscope.
   Channel 1-Pin ③ of CN102 of VS board
   External trigger-Pin ④ of CN102 of VS board
   (Connect the oscilloscope via the measuring pin tool for the video section (J-6082-140-A).)
8) Playback the alignment tape (WR5-1CP) for tracking.
9) Check that the RF waveform of the oscilloscope is flat at both the entrance and the exit.
   If not flat, perform necessary adjustment according to the separate 8 mm Video Mechanical Adjustment Manual IV (A Mechanism).
10) Perform "Processing after operations", after completing adjustments.

CN102 of VS board

1	PB 'CH RF
2	PB PCM RF
3	PB RF
4	RF SWP
5	RP GND
6	REC 2

[Processing after operations]

1) Connect the adjusting remote commander, and turn on the HOLD switch.
2) Select page: 1, address: 00, and set data: 01.
3) Select page: D, address: 02, and set data: 00.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: D, address: 16, and set data: 65.
6) Press the PAUSE button of the adjusting remote commander.
7) Remove the power supply from the unit.

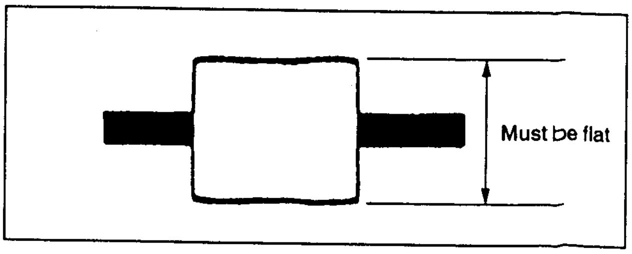


Fig. 6-2-1.

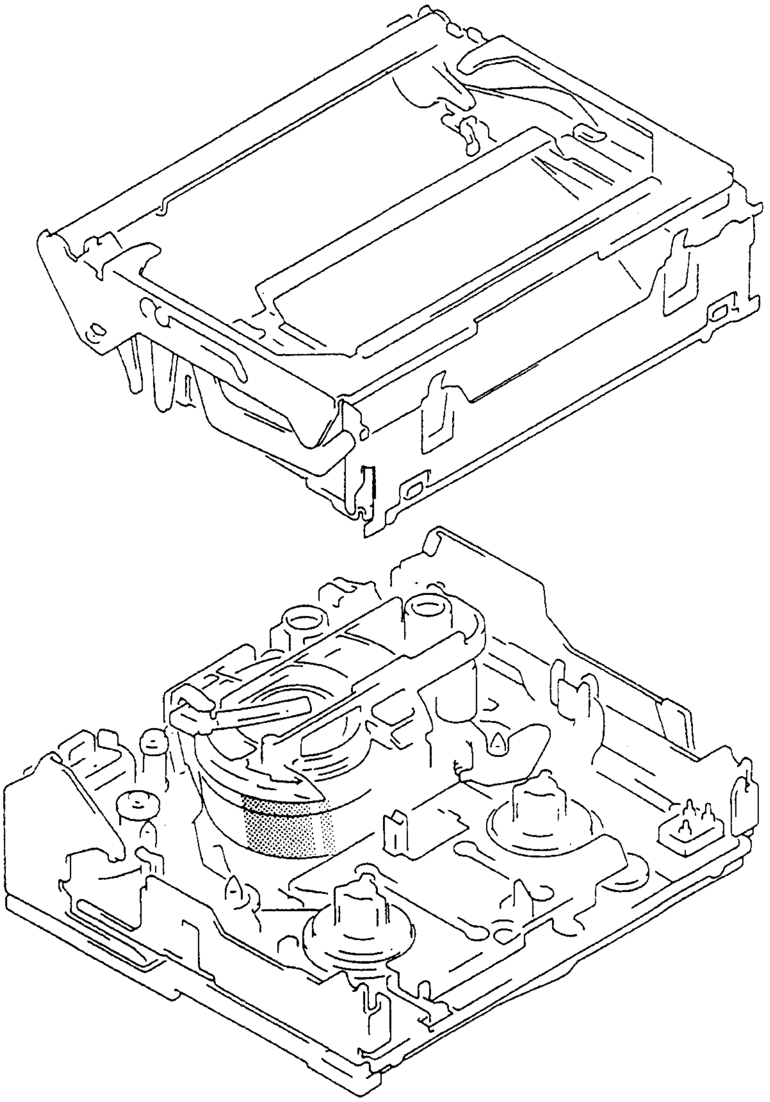
8 mm Video MECHANICAL ADJUSTMENT MANUAL IV

V12995

A MECHANISM

Video 8

File with the SERVICE MANUAL



8 VIDEO RECORDER

SONY®

TABLE OF CONTENTS

Section Title Page

1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

1-1. Cassette compartment Assembly ---------- 3
1-2. Operation with Cassette compartment Assembly Removed ---------- 5
1-3. Handling of Mode Selector ---------- 6
1-4. Mode Selector Schematic Diagram ---------- 7
1-5. Mode Selector Parts List ---------- 7

2. PERIODIC CHECK AND MAINTENANCE

2-1. Cleaning of Rotaly Drum Assembly ---------- 8
2-2. Cleaning of Tape Path ---------- 8
2-3. Periodic Check Items ---------- 9
2-4. Service Jigs List ---------- 10

3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

3-1. Retainer, Gooseneck Assembly ---------- 12
3-2. Protector Base Assembly ---------- 13
3-3. Drum Assembly ---------- 14
3-4. Capstan Motor Assembly ---------- 15
3-5. Take-UP Reel Assembly and T-Soft Assembly ---------- 16
3-6. Pinch Arm Assembly ---------- 17
3-7. LS Chassis Assembly ---------- 18
3-8. Guide Base T Assembly and Guide Base S Assembly ---------- 20
3-9. Guide Arm T Assembly and Guide Arm S Assembly ---------- 22
3-10. Supply Reel Table Assembly and TG-1 Arm Assembly ---------- 23
3-11. TG-2 Roller Assembly ---------- 24
3-12. TG-7 Arm Assembly ---------- 25
3-13. LM Motor Assembly ---------- 26
3-14. LS Arm ---------- 27
3-15. M Slider Assembly ---------- 28
3-16. Pinch Press Arm Assembly ---------- 29
3-17. Cam ---------- 30
3-18. GL Arm Assembly ---------- 31
3-19. L Gear A and L Gear B ---------- 32
3-20. Relay Pulley and Change Gear Assembly ---------- 33
3-21. Rotary Upper Drum Replacement ---------- 34
3-22. Adjustment of Tension Regulator Position ---------- 35
3-23. FWD Back Tension Adjustment ---------- 35
3-24. Reel Torque Check ---------- 35

4. TAPE PATH ADJUSTMENT

4-1. Preparation for Adjustment ---------- 37
4-2. Tracking Adjustment ---------- 38
4-3. No.2 Guide (TG-2) Adjustment ---------- 38
4-3-1. No.2 Guide (TG-2) Height Presetting ---------- 38
4-3-2. No.2 Guide (TG-2) Adjustment ---------- 39
4-4. No.7 Guide (TG-7) Adjustment ---------- 39
4-5. CUE and REW Waveform Check ---------- 39
4-6. Check After Adjustment ---------- 40
4-6-1. Tracking Check ---------- 40
4-6-2. Rising Check ---------- 40
4-6-3. Tape Path Check ---------- 40

1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.
Mechanical adjustment is done in the USE mode. (To select the USE mode, refer to "1-3, Handling of Mode Selector".)

1-1. CASSETTE COMPARTMENT ASSEMBLY

1. Removal (Fig. 1)

1) Select the USE mode.
2) Push the part ⓐ of lock arm 1 toward the arrow Ⓐ to unlock from lock guide 2, and raise the cassette compartment as shown in Fig. a.
3) Remove two screws 3 and remove the LS frame 4 toward the arrow Ⓑ.
4) With the cassette compartment assembly 5 pushed in arrow Ⓒ direction, distort tabs ⓑ and ⓒ of MD side plate toward the arrow Ⓓ to disengage from catches ⓓ and ⓔ of cassette compartment assembly respectively. In such a case, insert a screwdriver between MD side plate and catch and disengage the tab ⓑ first, then disengage the tab ⓒ for easy removal as shown in Fig. b.
5) Raise the cassette compartment assembly 5 in the opposite direction of arrow Ⓒ until the shafts ⓕ and ⓖ are disengaged, and push left and right side plates toward arrow Ⓓ to remove the cassette compartment assembly.

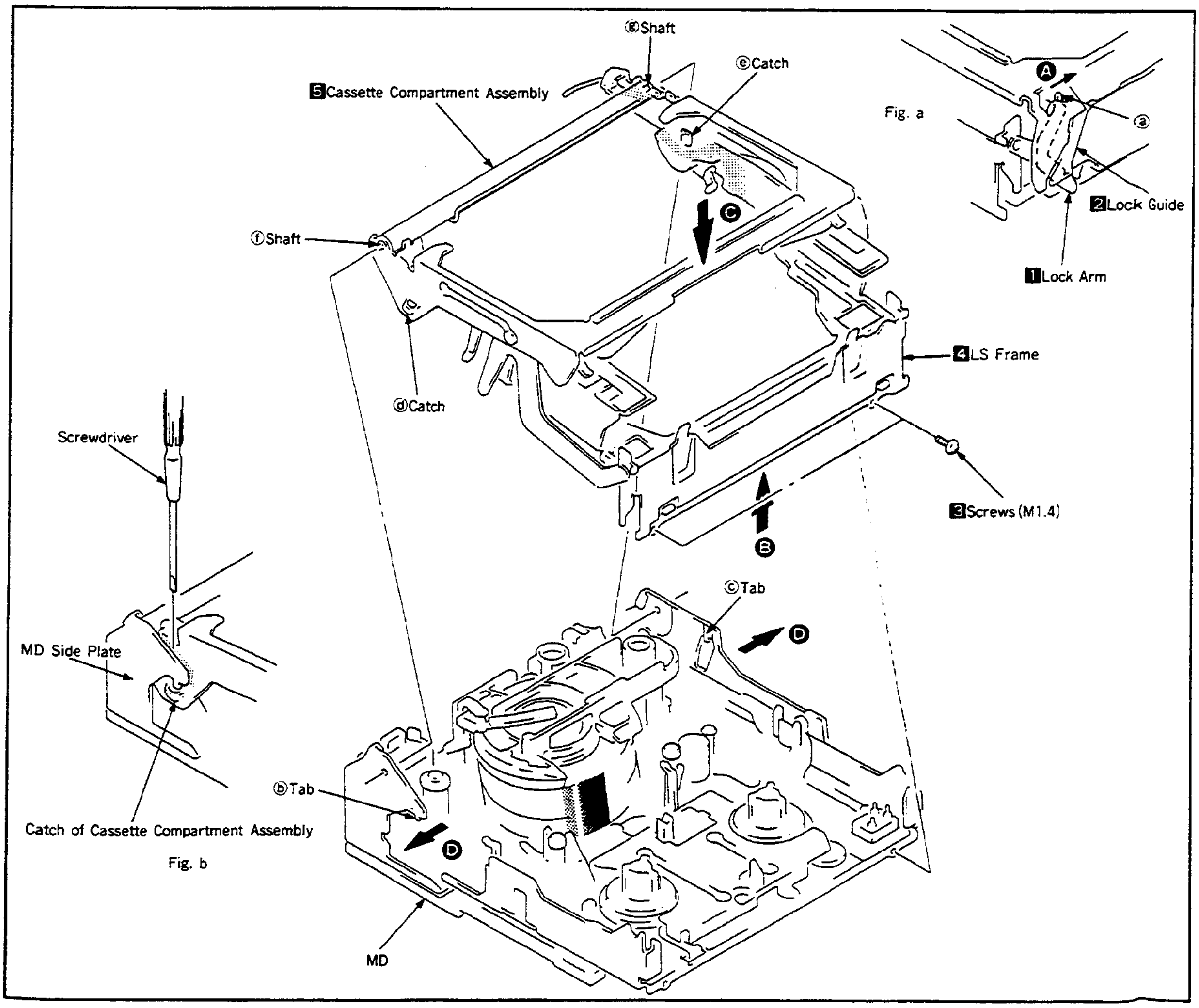

ⓖShaft
ⓔCatch
5Cassette Compartment Assembly
Fig. a
Ⓐ
ⓐ
2Lock Guide
1Lock Arm
ⓕShaft
Ⓒ
4LS Frame
ⓓCatch
Screwdriver
3Screws (M1.4)
Ⓑ
ⓒTab
Ⓓ
MD Side Plate
ⓑTab
Ⓓ
Catch of Cassette Compartment Assembly
Fig. b
MD

Fig. 1

2. Mounting (Fig. 2)

1) Select the $\boxed{\text{USE}}$ mode.
2) Draw the cassette holder **6** of cassette compartment assembly **5** toward the arrow 🅔, and lower the LS frame **4** toward the arrow 🅕.
3) With the cassette compartment assembly **5** tilted by about 45° against MD, insert shafts ⓕ and ⓖ of cassette compartment assembly into holes ⓗ and ⓘ of MD side plate respectively.
   At this time, the part ⓙ of torsion bar must be positioned on the side ⓚ of LS flexible board (FP-443) (not on the side ⓛ), as shown in Fig. c.
4) Holding holes ⓗ and ⓘ of MD side plate, press the cassette compartment assembly **5** so that its catches ⓓ and ⓔ are engaged with tabs ⓑ and ⓒ of MD side plate. In such a case, the lock arm **1** of cassette compartment assembly must be inserted into a groove in the guide rail **7** on the MD side plate as shown in Fig. d.
5) Insert left and right side plates ⓜ and ⓝ of LS frame **4** inside the LS chassis **8**.
6) Push down the cassette compartment to lock.

Note : Make sure that the shafts ⓕ, ⓖ and the tabs ⓞ, ⓟ are set in the MD side plate properly.

7) Tighten two screws **3**.

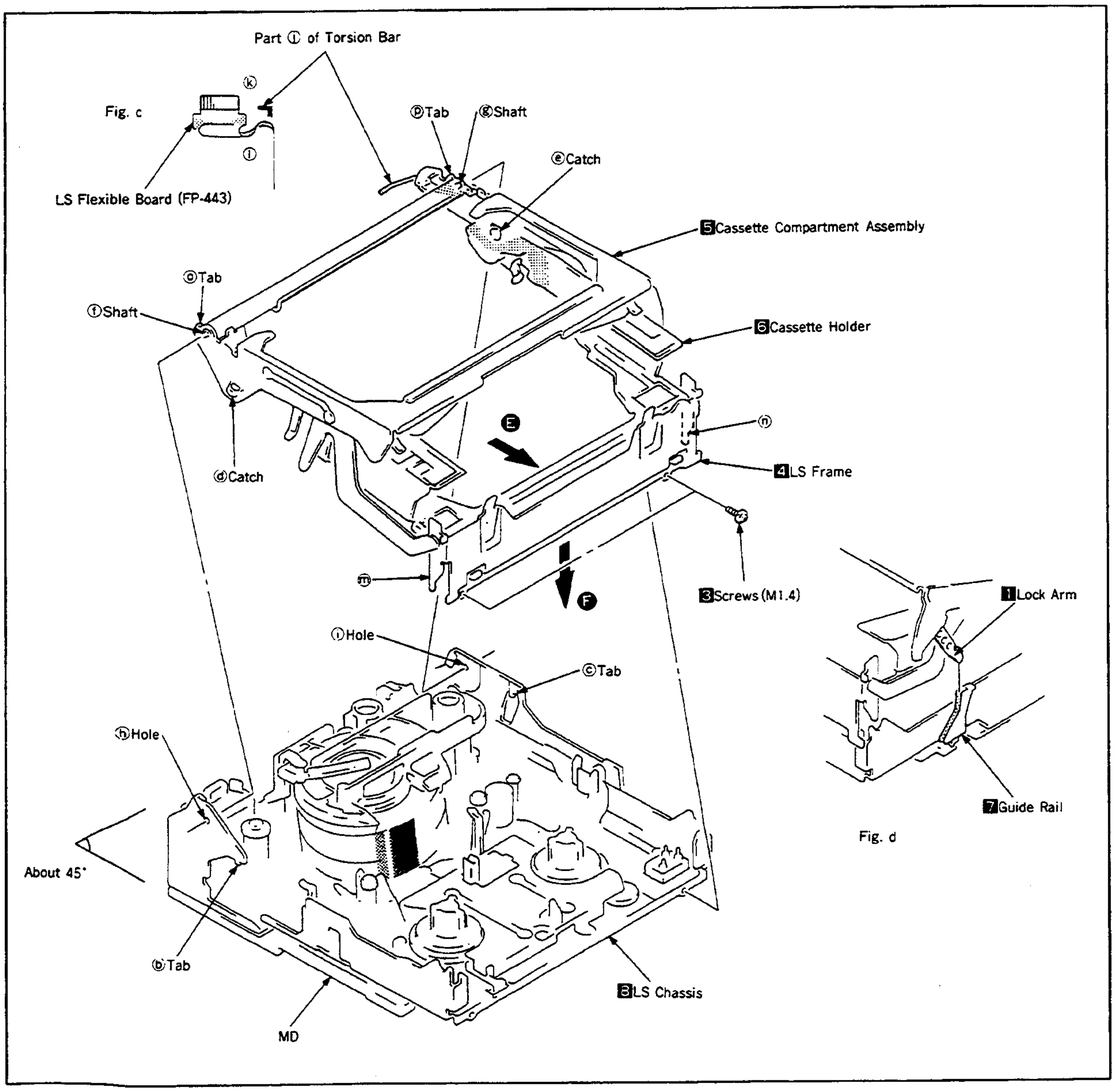

Part ⓙ of Torsion Bar
Fig. c
ⓚ
ⓛ
LS Flexible Board (FP-443)
ⓟTab
ⓖShaft
ⓔCatch
5 Cassette Compartment Assembly
ⓞTab
ⓕShaft
6 Cassette Holder
🅔
ⓓCatch
ⓝ
4 LS Frame
ⓜ
🅕
3 Screws (M1.4)
1 Lock Arm
ⓘHole
ⓒTab
ⓗHole
About 45°
ⓑTab
8 LS Chassis
MD
7 Guide Rail
Fig. d

Fig. 2

1-2. OPERATION WITH CASSETTE COMPARTMENT ASSEMBLY REMOVED (Fig. 3)

1) Referring to the Service Manual, supply power with the cabinet and camera removed. (Make the mechanical deck ready to operate.)
2) Place the cap 2 on the Reflector C 1.
3) Press the pin of the push switch 3 (ON state) and fix it with adhesive tape 4 in that state.

Note : Press the asterisked (✱) pin to set the REC mode.
(This is not required for the other modes.)

4) Push the cassette compartment DOWN switch 5 in an arrow direction as shown in Fig. a.

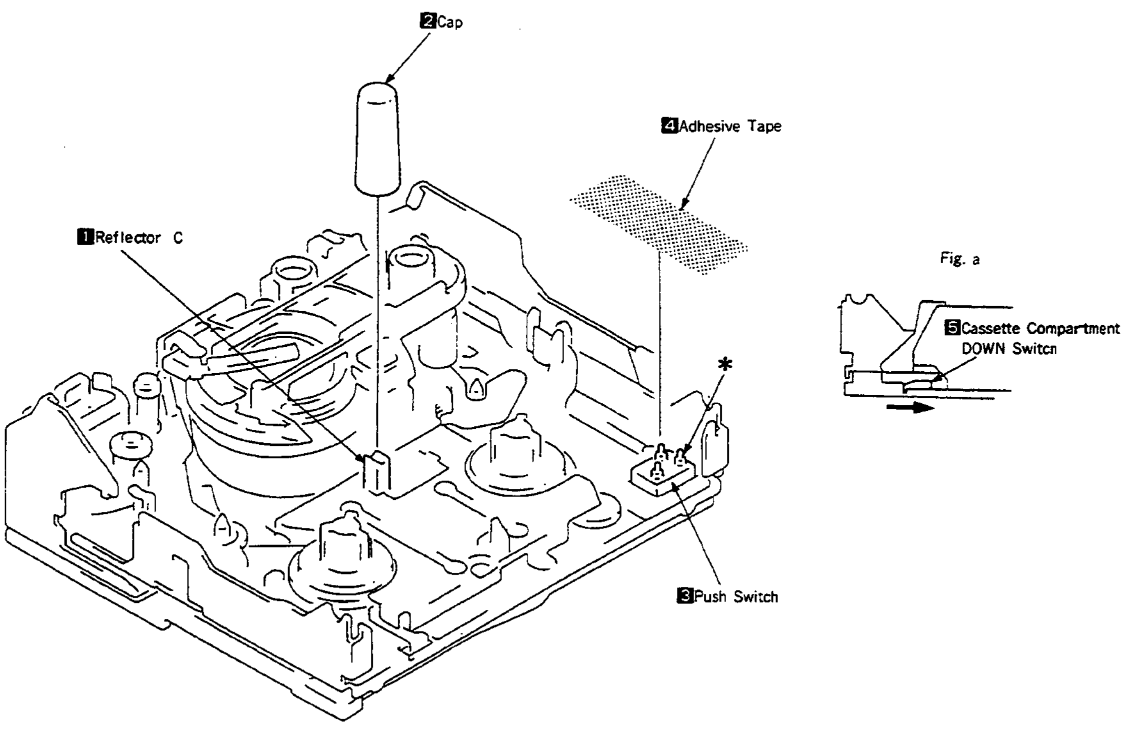

2 Cap
4 Adhesive Tape
1 Reflector C
Fig. a
5 Cassette Compartment DOWN Switch
*
3 Push Switch

Fig. 3

1-3. HANDLING OF MODE SELECTOR

- Stick the MD process table label to the mode selector IV panel, then mount the panel on the mode selector.
  U,U', FL, O, O' and A mechanisms have different mode indications respectively. Select your disired type. (Fig.4)

1 Construction (Fig.5)

2 Connection (Fig.6)

For CCD-FX410 series

1) Insert the FP-425 flexible connector ❶ and M-SW connector ❷ into the mode selector IV conversion connector ❸ respectively.

3. Handling

1) Use the M mode selector buttons only.
2) During mode selection, "BLANK" lights up when no mode is being selected.
3) If the right M mode selector button is kept pressed, END, EJECT, USE, LOAD, READY,TURN, REC and FF light up in that order.
4) When changing over from the FF mode back to the END mode, press the left M mode selector botton to select your desired mode.

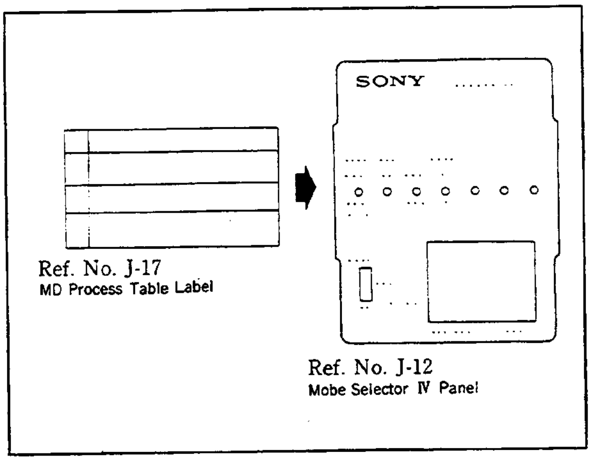

SONY
Ref. No. J-17
MD Process Table Label
Ref. No. J-12
Mobe Selector IV Panel

Fig. 4

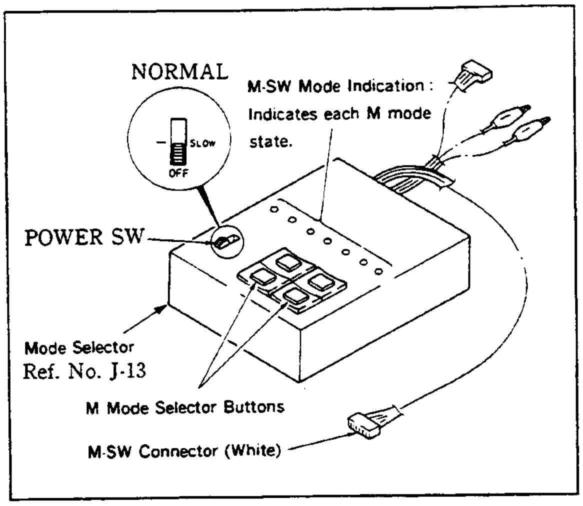

NORMAL
SLOW
OFF
M-SW Mode Indication : Indicates each M mode state.
POWER SW
Mode Selector
Ref. No. J-13
M Mode Selector Buttons
M-SW Connector (White)

Fig. 5

For CCD-FX410 series

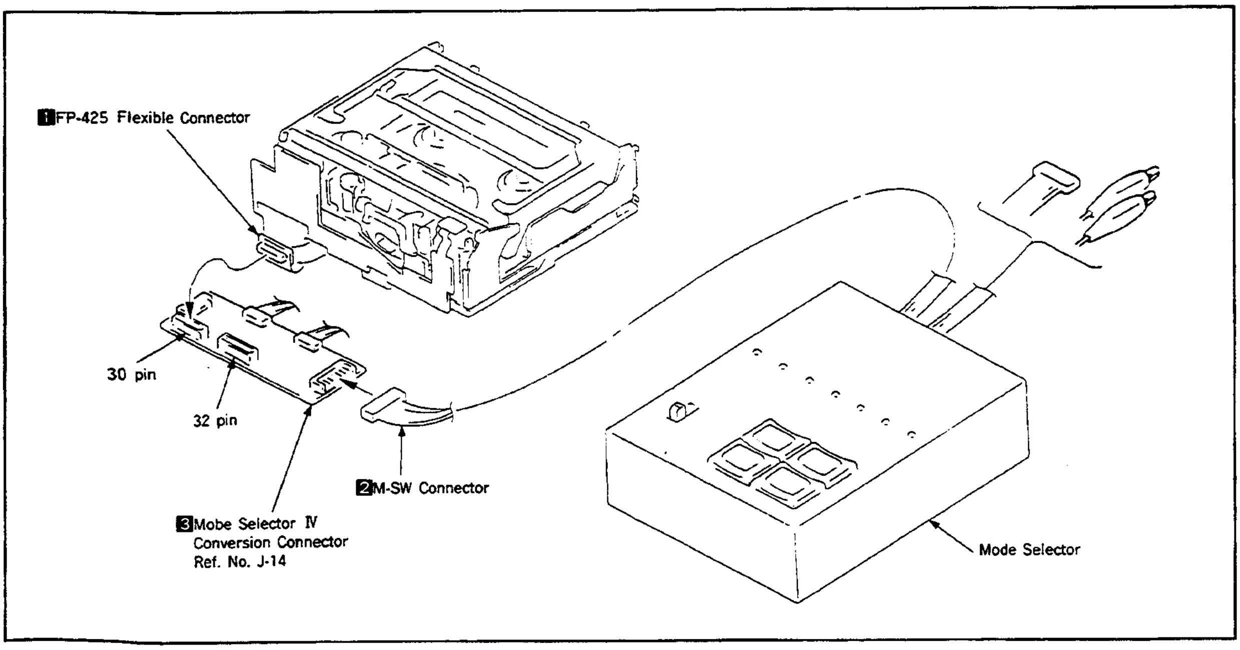
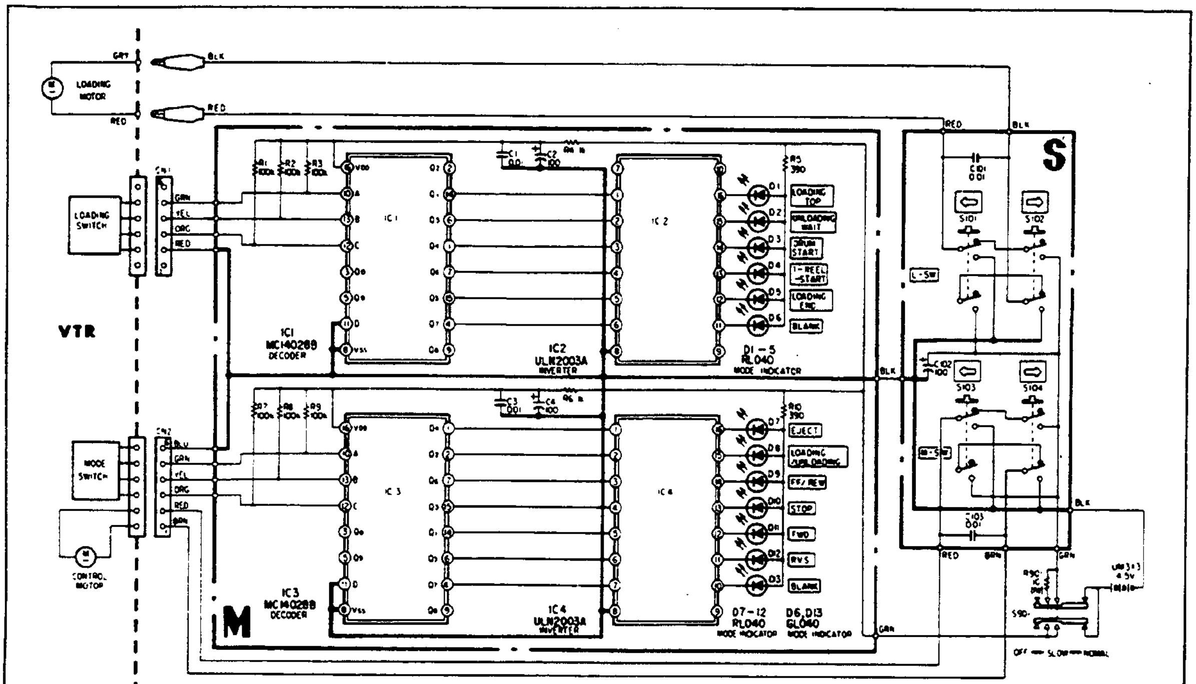

❶FP-425 Flexible Connector
30 pin
32 pin
❷M-SW Connector
❸Mobe Selector IV
Conversion Connector
Ref. No. J-14
Mode Selector

Fig. 6

1-4. MODE SELECTOR SCHEMATIC DIAGRAM


GRY
BLK
RED
LOADING MOTOR
LOADING SWITCH
MODE SWITCH
CONTROL MOTOR
VTR
SW1
SW2
GRN
YEL
ORG
RED
BLU
BRN
R1 100k
R2 100k
R3 100k
R4 1k
R5 390
C1 0.01
C2 100
IC1
IC1 MC14028B DECODER
IC2
IC2 ULN2003A INVERTER
D1–5 RL040 MODE INDICATOR
LOADING TOP
UNLOADING WAIT
DRUM START
T-REEL -START
LOADING END
BLANK
R7 100k
R8 100k
R9 100k
R6 1k
R10 390
C3 0.01
C4 100
IC3
IC3 MC14028B DECODER
IC4
IC4 ULN2003A INVERTER
D7–12 RL040 MODE INDICATOR
D6, D13 GL040 MODE INDICATOR
EJECT
LOADING /UNLOADING
FF/REW
STOP
FWD
RVS
BLANK
M
S
C101 0.01
C102 100
C103 0.01
S101
S102
S103
S104
L-SW
M-SW
R901 10
UM3×3 4.5V
S901
OFF — SLOW — NORMAL

M-SW
IC 3 1

DECODER INPUT			MODE	LED NO
C	B	A		
0	0	0		
0	0	1	FWD	D11
0	1	0	LOADING/UNLOADING	D8
0	1	1	STOP	D10
1	0	0	EJECT	D7
1	0	1	RVS	D12
1	1	0	FF/REW	D9
1	1	1	BLANK	D13

0: INPUT LEVEL L
1: INPUT LEVEL H

L-SW
IC 1 1

DECODER INPUT			MODE	LED NO
C	B	A		
0	0	0		
0	0	1	LOADING TOP	D 1
0	1	0		
0	1	1	LOADING END	D 5
1	0	0	DRUM START	D 3
1	0	1	UNLOADING WAIT	D 2
1	1	0	T-REEL -START	D 4
1	1	1	BLANK	D 6

SWITCH		DIRECTION OF MOTOR REVOLUTION
⇦	⇨	
OFF	OFF	STOP
ON	OFF	⇦
OFF	ON	⇨

⇦ L-SW LOADING END → LOADING TOP
M-SW RVS → EJECT

⇨ L-SW LOADING TOP → LOADING END
M-SW EJECT → RVS

1-5. MODE SELECTOR PARTS LIST

Ref. No	Part No.	Description		
		CAPACITOR		
C1	1-108-579-00	MILER	$0.01\mu F$	50V
C2	1-123-333-00	ELECT	$100\mu F$	24V
C3	1-108-579-00	MILER	$0.01\mu F$	50V
C4	1-123-333-00	ELECT	$100\mu F$	24V
C101	1-108-579-00	MILER	$0.01\mu F$	50V
C102	1-123-333-00	ELECT	$100\mu F$	24V
C103	1-108-579-00	MILER	$0.01\mu F$	50V
		DIODE		
D1	8-719-812-31	DIODE TLR123		
D2	8-719-812-31	DIODE TLR123		
D3	8-719-812-31	DIODE TLR123		
D4	8-719-812-31	DIODE TLR123		
D5	8-719-812-31	DIODE TLR123		
D6	8-719-812-33	DIODE TLG123A		
D7	8-719-812-31	DIODE TLR123		
D8	8-719-812-31	DIODE TLR123		
D9	8-719-812-31	DIODE TLR123		
D10	8-719-812-31	DIODE TLR123		
D11	8-719-812-31	DIODE TLR123		
D12	8-719-812-31	DIODE TLR123		
D13	8-719-812-33	DIODE TLG123A		

Ref. No	Part No.	Description		
		IC		
IC1	8-752-240-28	IC TC4028BP		
IC2	8-752-120-03	IC μPA2003C		
IC3	8-759-240-28	IC TC4028BP		
IC4	8-759-120-03	IC μPA2003C		
		RESISTOR		
R1	1-247-179-00	CARBON	100K	1/4W
R2	1-247-179-00	CARBON	100K	1/4W
R3	1-247-179-00	CARBON	100K	1/4W
R4	1-247-131-00	CARBON	1K	1/4W
R5	1-247-121-00	CARBON	390	1/4W
R6	1-247-131-00	CARBON	1K	1/4W
R7	1-247-179-00	CARBON	100K	1/4W
R8	1-247-179-00	CARBON	100K	1/4W
R9	1-247-179-00	CARBON	100K	1/4W
R10	1-247-121-00	CARBON	390	1/4W
R901	1-214-594-00	METAL	10	1W

2. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regarless of the length of use.

2-1. CLEANING OF ROTARY DRUM ASSEMBLY

1) Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquif (Ref. No.J-1) to the rotary drum assembly.
   Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

Note : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a pependicular direction to the it. make sure to follow the instructions above for cleaning the rotarydrum assembly.

2-2. CLEANING OF TAPE PATH (Fig.7)

1) In the USE mode, clean the tape running system (TG - 1,- 2,- 3,- 4,- 5, - 6, - 7, pinch roller, and capstan shaft) and the lower drum, using a super fine applicator (Ref. No. J - 3) soaked in the cleaning liquid.

Note : Note that no oil or grease of each link mechanism adheres to the super fine applicator (Ref. No. J - 3).

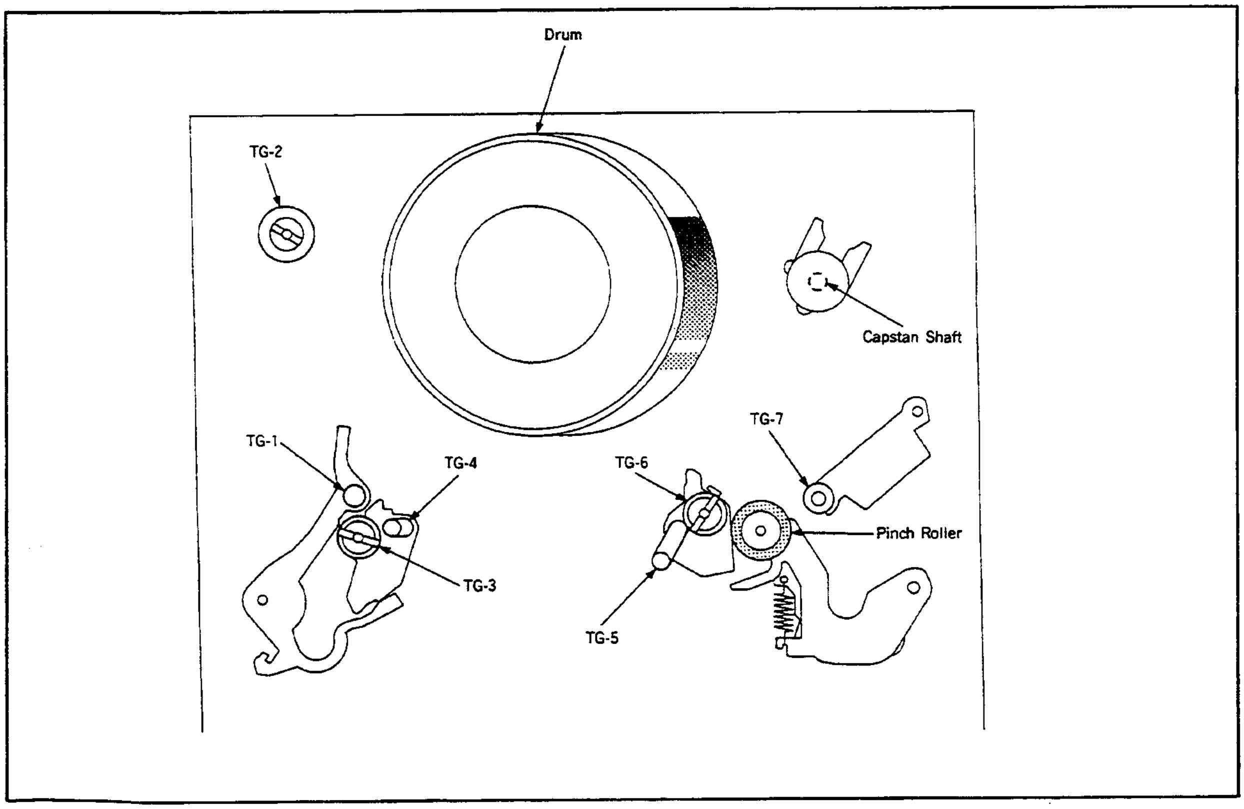


Fig. 7

2-3. PERILDIC CHECK ITEMS

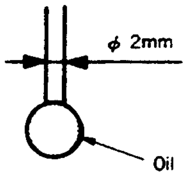
Location of Maintenance and check		Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Tape trans-portion System	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degaussing of rotary assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Driving System	Relay belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-944-539-01
	Capstan shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Be adsolutely careful not to get oil on the tape path surface.
	Relay pulley shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	A-7040-304-A
Performance Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD. RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○: Cleaning ◎: Oil ☆: Confirmation

Note: When overhauling, refer to the items above to replace parts.

Note: Concerning oil

- Be sure to use specified oil. (If you use oil with different visicosity, etc., it may cause troubles.)
  Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT - 68)
- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be worn out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.

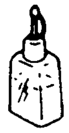


2-4. Service jigs list

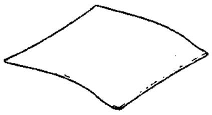
Ref. No.	Name	Part No.	Fixture No.	Usage and Others
J-1	Cleaning fluid	Y-2031-001-0		
J-2	Chamois cloth	2-034-697-00		
J-3	Super fine applicator (Made by NIPPON APPLICATOR, P752D)			
J-4	Head degausser	Widely available		
J-5	Small mirror for adjustment Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-9	FWD and RVS winding torque cassette	J-6080-824-A	GD-2086	
J-10	Rotary drum jig	(Attached to the maintenance rotary upper drum)		
J-11	Screwdriver for tape path	J-6082-026-A		For tape guide adjustment
J-12	Mode selector Ⅳ panel	J-6082-105-A		
J-13	Mode selector	J-6080-825-A		For all models
J-14	Mode selector Ⅳ conversion connector	J-6082-167-A		
J-15	FWD B.T. adjusting driver	J-6082-182-A		
J-16	Adjusting remote controller	J-6082-053-B		Tape path (Setting of PATH mode)
J-17	MD process table label	J-6082-166-A		

Other equipment ●Oscilloscope
●Analog tester (20 kΩ)

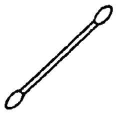
J-1



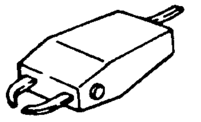
J-2



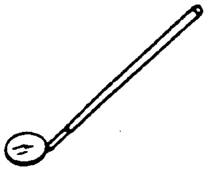
J-3



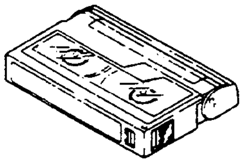
J-4



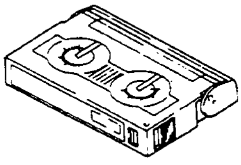
J-5



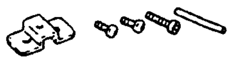
J-6



J-9

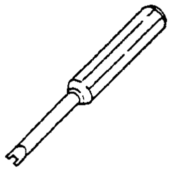


J-10

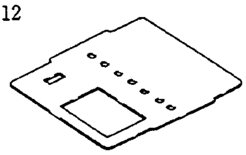


(Attached to the maintenance rotary upper drum)

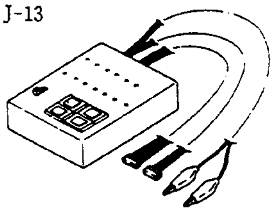
J-11



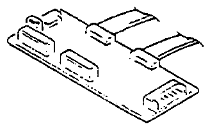
J-12



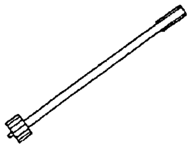
J-13



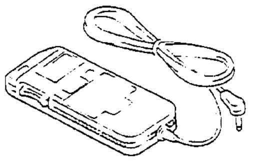
J-14



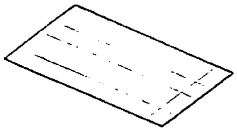
J-15



J-16



J-17



3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

Note : Use the mode selector (Ref. No. J-13) for the following mechanical checks, adjustments and replacements.

Note : The modes in ☐ are those set by pressing the mode selector buttons.

3-1. RETAINER, GOOSENECK ASSEMBLY (Fig. 8)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove a screw ❶.
3) Remove the Retainer, Gooseneck assembly ❷.

2. Mounting

1) Mount the Retainer, Gooseneck assembly ❷ with its two tabs and holes of LS chassis engaged with its hole and a boss of LS chassis.
2) Tighten the screw ❶.
3) Referring to 1-1, mount the cassette compartment assembly.

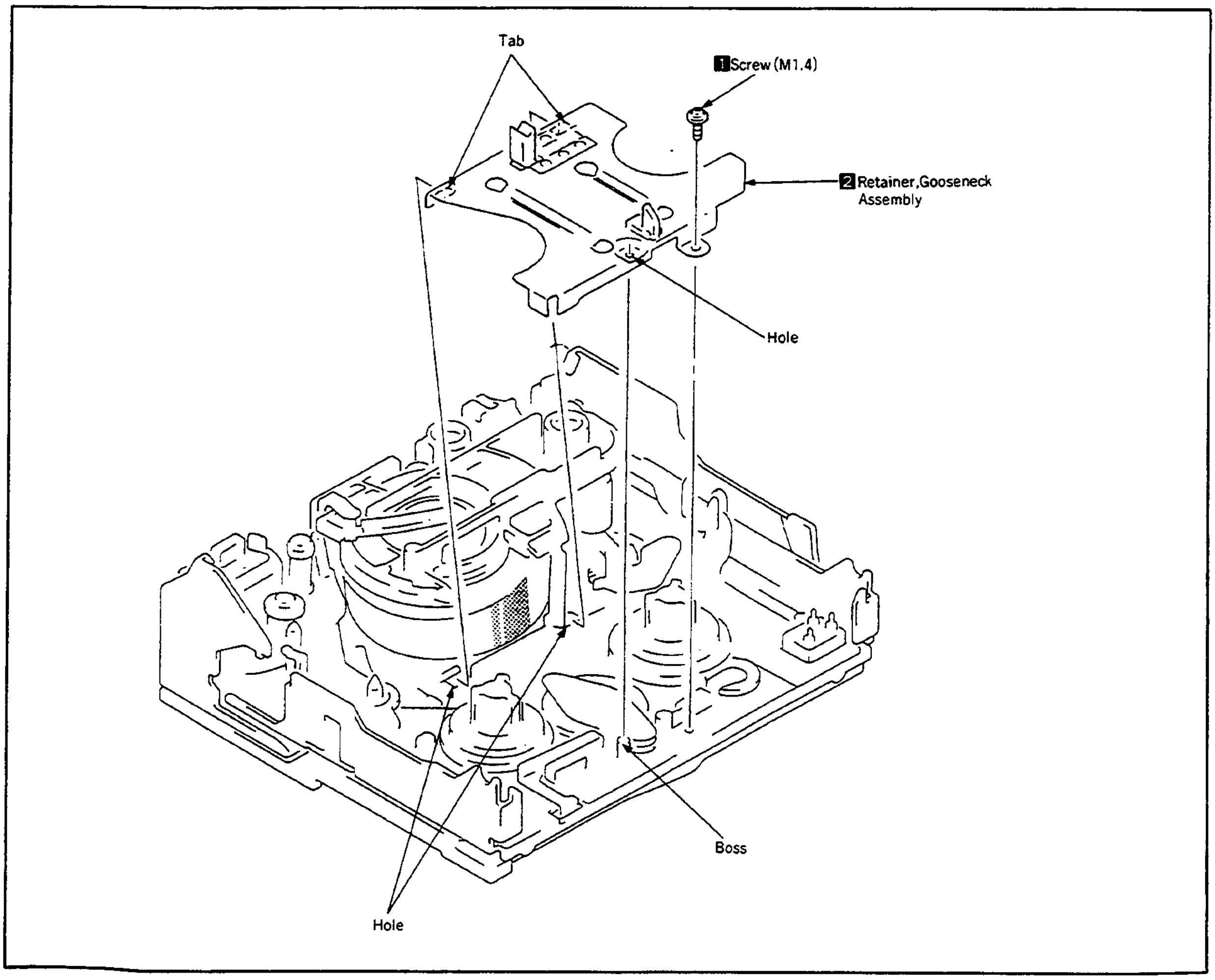


Fig. 8

3-2. PROTECTOR BASE ASSEMBLY (Fig. 9)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screws ❶, then the protector base assembly ❷.

2. Mounting

1) Mount the protector base assembly ❷ with its three hole. engaged with two dowels of mechanical chassis, and a dowel of TG-5 Base Holder ❸.
2) Tighten two screws ❶.
3) Referring to 1-1, mount the cassette compartment assembly.

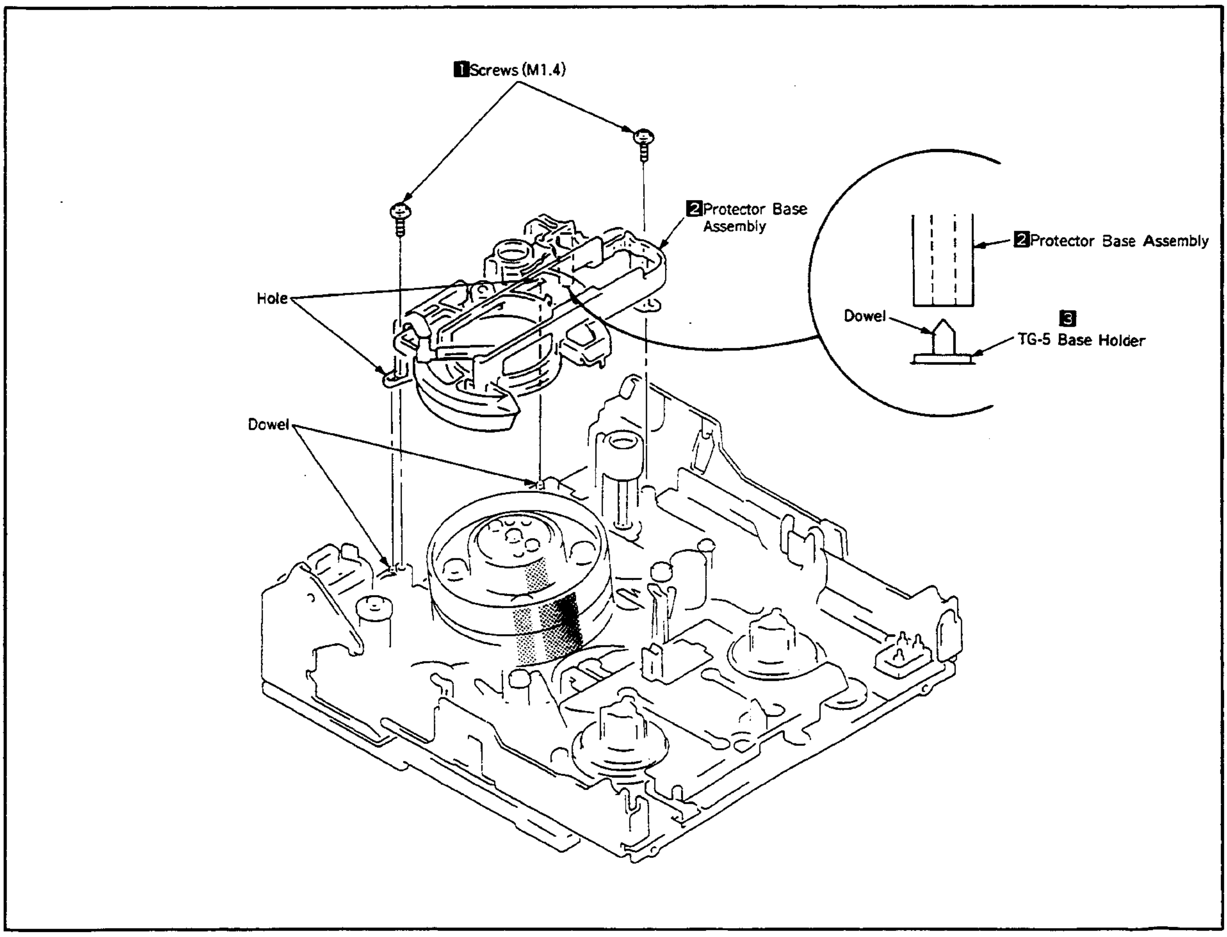

❶Screws (M1.4)
❷Protector Base Assembly
Hole
Dowel
❷Protector Base Assembly
Dowel
❸ TG-5 Base Holder

Fig. 9

3-3. DRUM ASSEMBLY (Fig. 10)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-2, remove the protect base assembly.
3) Disconnect the connector of FP-444 flexible board ❶ on the back of MD.
4) Remove three screw ❷, then the drum assembly ❸.

Note : Do not touch the outer surfaced of drum (hold portions Ⓐ and Ⓑ of drum).

2. Mounting

1) Mount the drum assembly ❸ while aligning with two dowels ⓐ of chassis.

Note : Do not touch the outer surfaced of drum (hold portions Ⓐ and Ⓑ of drum).

2) Tighten three screw assemblies ❷ in the order of 1, 2 and 3.

Note : Tighten lightly not to deform the drum lead.

3) Apply a screw locking agent to prevent screws ftom loosening.

Note : In tightening the screws, pushing down the drum extremely will allow the drum to float up.

4) Connect the connector of FP-444 flexible board ❶ on the back of MD.
5) Referring to 3-2, mount the protect base assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

Note : After mounting, make tape path adjustment in Section 4.

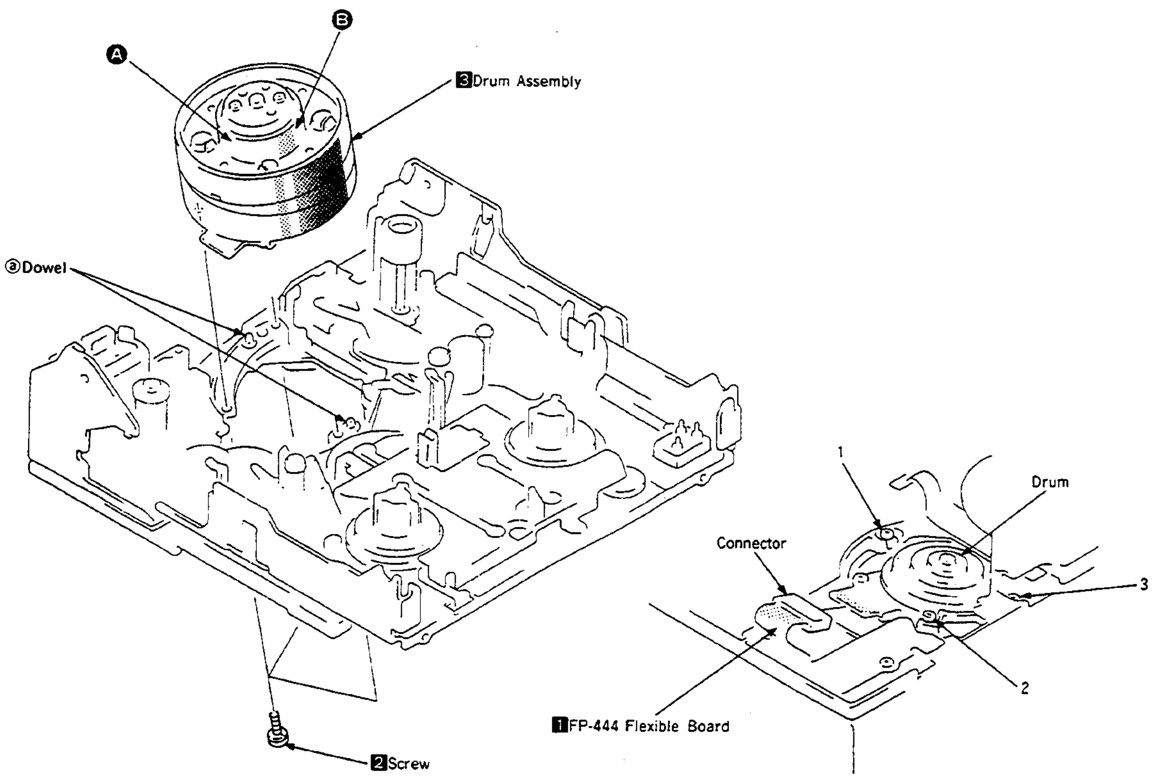


Fig. 10

3-4. CAPSTAN MOTOR ASSEMBLY (Fig. 11)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screw 1, then the capstan cover 2.
3) Remove the screw 3, then the capstan motor assembly 4.

2. Mounting

1) Mount the capstan motor assembly 4 and tighten the scr
3.

Note : In mounting the capstan motor assembly, hold lightly the capstan motor assembly until the rotor gear aligns with the change gear Assy, then insert fully the assembly when both gears are engaged completely by manually rotating the rotor. (Take care not to damage the change gear Assy.)

2) Mount the capstan cover 2 and tighten two screws 1.
3) Referring to 1-1, mount the cassette compartment assembly.

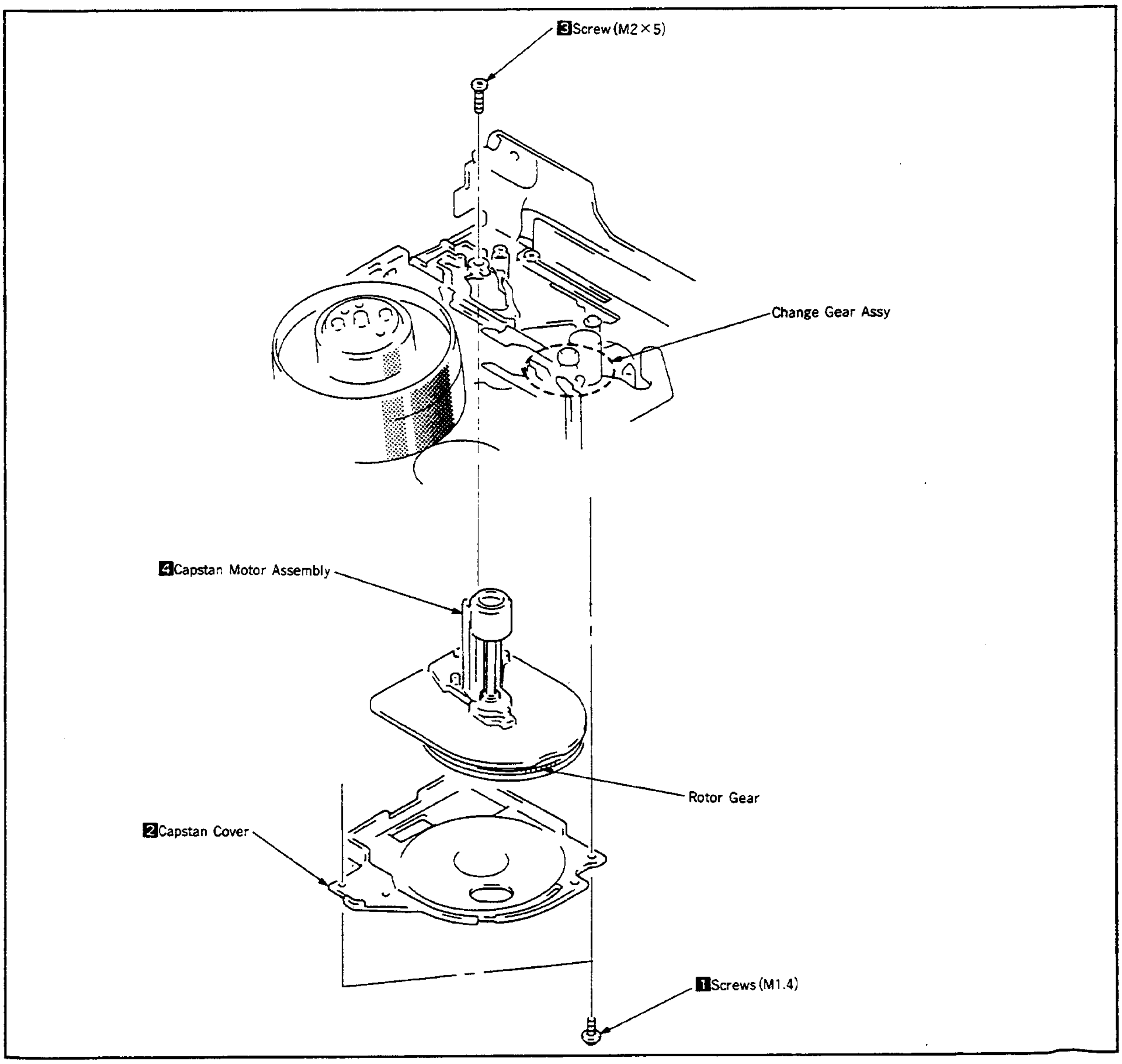

3 Screw (M2 × 5)
Change Gear Assy
4 Capstan Motor Assembly
Rotor Gear
2 Capstan Cover
1 Screws (M1.4)

Fig. 11

3-5. TAKE-UP REEL TABLE ASSEMBLY AND T- SOFT ASSEMBLY (Fig. 12)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Remove the take-up reel table assembly **1**.
4) Remove the T soft assembly **2**, then the T soft arm **3**.

2. Mounting

1) Mount the T soft arm **3** with its long hole ⓒ engaged with the boss ⓓ of LS chassis.
2) Mount the T soft assembly **2** with its tab ⓐ engaged with a square hole ⓑ of T soft arm, as shown in Fig. a.
3) Mount the take-up reel table assembly **1** and rotate it toward the arrow Ⓐ to be latched with T hard claw.
4) Referring to 3-1. mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

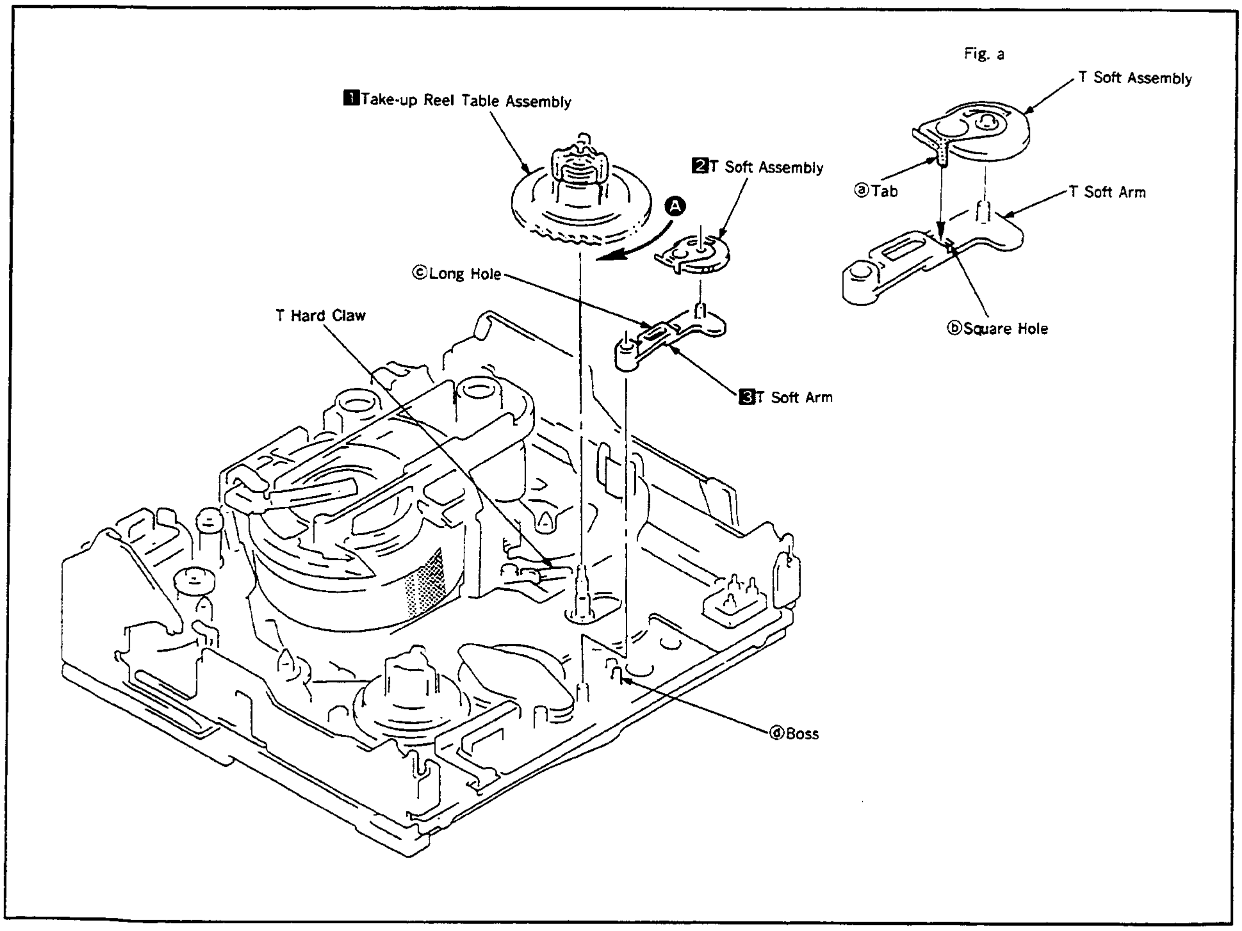

1 Take-up Reel Table Assembly
2 T Soft Assembly
Ⓐ
ⓒ Long Hole
T Hard Claw
3 T Soft Arm
ⓓ Boss
Fig. a
T Soft Assembly
ⓐ Tab
T Soft Arm
ⓑ Square Hole

Fig. 12

3-6. PINCH ARM ASSEMBLY (Fig. 13)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Select the READY mode.
3) Remove a washer ❶, then the pinch arm assembly ❷.

2. Mounting

1) Select the READY mode.
2) Hooking a spring of pinch arm assembly ❷ to the casse positioning boss on the chassis, mount the pinch arm asser bly on the shaft of LS chassis assembly as shown in Fig. a.
3) Push in the spring with tweezers up to the root of boss as shown in Fig. b.
4) Mount the washer ❶.
5) Referring to 1-1, mount the cassette compartment assembly.

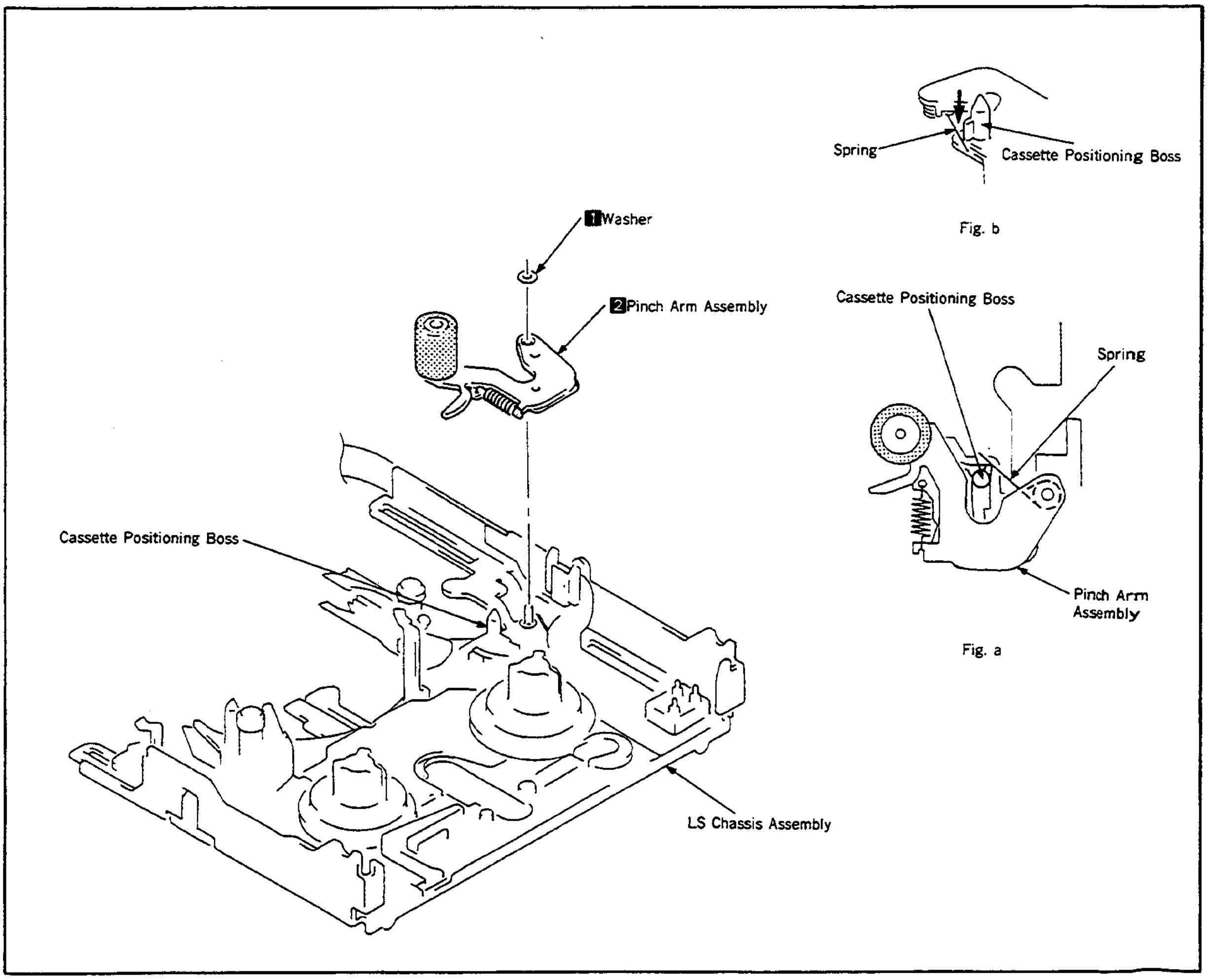

Spring
Cassette Positioning Boss
Fig. b
❶Washer
❷Pinch Arm Assembly
Cassette Positioning Boss
Spring
Pinch Arm Assembly
Fig. a
Cassette Positioning Boss
LS Chassis Assembly

Fig. 13

LS CHASSIS ASSEMBLY (Fig. 14)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Remove a screw 1, TG-5 base holder 2, and LS flexible board 3.
5) Remove a lock washer 4, then the gooseneck as sembly 5.
6) Remove four screws 6, then the LS chassis assembly 7.

2. Mounting

1) Select the USE mode.
2) Confirm that the T hard claw and the outsert on the back of LS chassis are positioned as shown in Fig. a. (The T hard claw must be higher than corner ⓐ of chassis hole.) If not high, turn the outsert in the arrow direction while pushing the T hard claw from LS chassis to the chassis.
3) Sliding the GL slider, align the top edge of long hole ⓑ in GL slider with the edge face ⓒ of LS chassis hole as shown in Fig. b.
4) Mount the LS chassis assembly 7 on the chassis.

Note : At this time, aligh a dowel ⓓ on LS chassis with a long hole ⓔ of No.7 guide on chassis, a long hole of GL slider with a GL arm pin, a groove of LS cam plate with an LS arm pin respectively as shown in Fig. c and d.

5) Tighten four screws 6.
6) Mount the LS flexible board 3 and TG-5 base holder 2,then tighten the screw 1.
7) Mount the Gooseneck assembly 5 and fix it with a washer 4.

Note : Using the mode selector, confirm that loading and unloading are performed smoothly.

8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.
10) Referring to 1-1, mount the cassette compartment assembly.

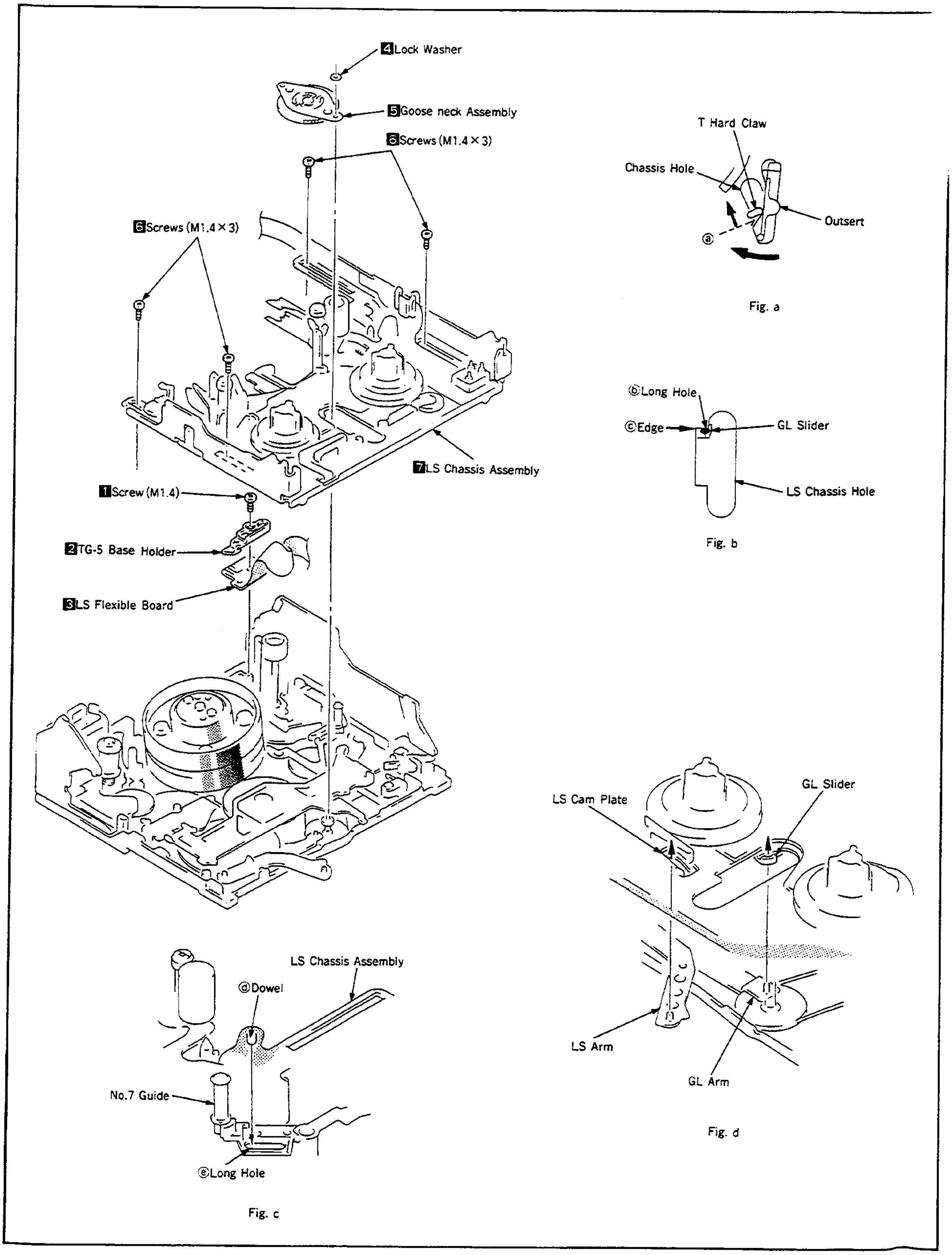

4 Lock Washer
5 Goose neck Assembly
6 Screws (M1.4 × 3)
6 Screws (M1.4 × 3)
7 LS Chassis Assembly
1 Screw (M1.4)
2 TG-5 Base Holder
3 LS Flexible Board
T Hard Claw
Chassis Hole
Outsert
ⓐ
ⓑ Long Hole
ⓒ Edge
GL Slider
LS Chassis Hole
LS Chassis Assembly
ⓓ Dowel
No.7 Guide
ⓔ Long Hole
LS Cam Plate
GL Slider
LS Arm
GL Arm

Fig. a

Fig. b

Fig. c

Fig. d

Fig. 14

3- GUIDE BASE T ASSEMBLY AND GUIDE BASE S ASSEMBLY (Fig. 15, 16)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Push in the GL slider ❶ toward the arrow Ⓐ, and remove the guide base T assembly ❷ and guide base S assembly ❸ from the guide rail respectively as shown in Fig. 15.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T sofr assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

6) Turning the guide base T assembly ❷ and guide base S assembly ❸ respectively, align the shaft to hole to remove as shown in Fig. a.

2. Mounting

1) Turning the guide base T assembly ❷ and guide base S assembly ❸ respectively, align the shaft with a hole to mount as shown in Fig. a (Fig. 15).
2) On the back side of chassis, insert the guide arm T assembly ❹, guide arm S assembly ❺ and GL slider ❶ from position shown in Fig.b to position shown in Fig. c. Also, aligning the guide base T assembly ❷ and guide base S assembly ❸ with the respective guide rails, push in the GL slider ❶ toward the arrow Ⓑ as shown in Fig. 16.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm.

6) Referring to 1-1, mount the cassette compartment assembly.

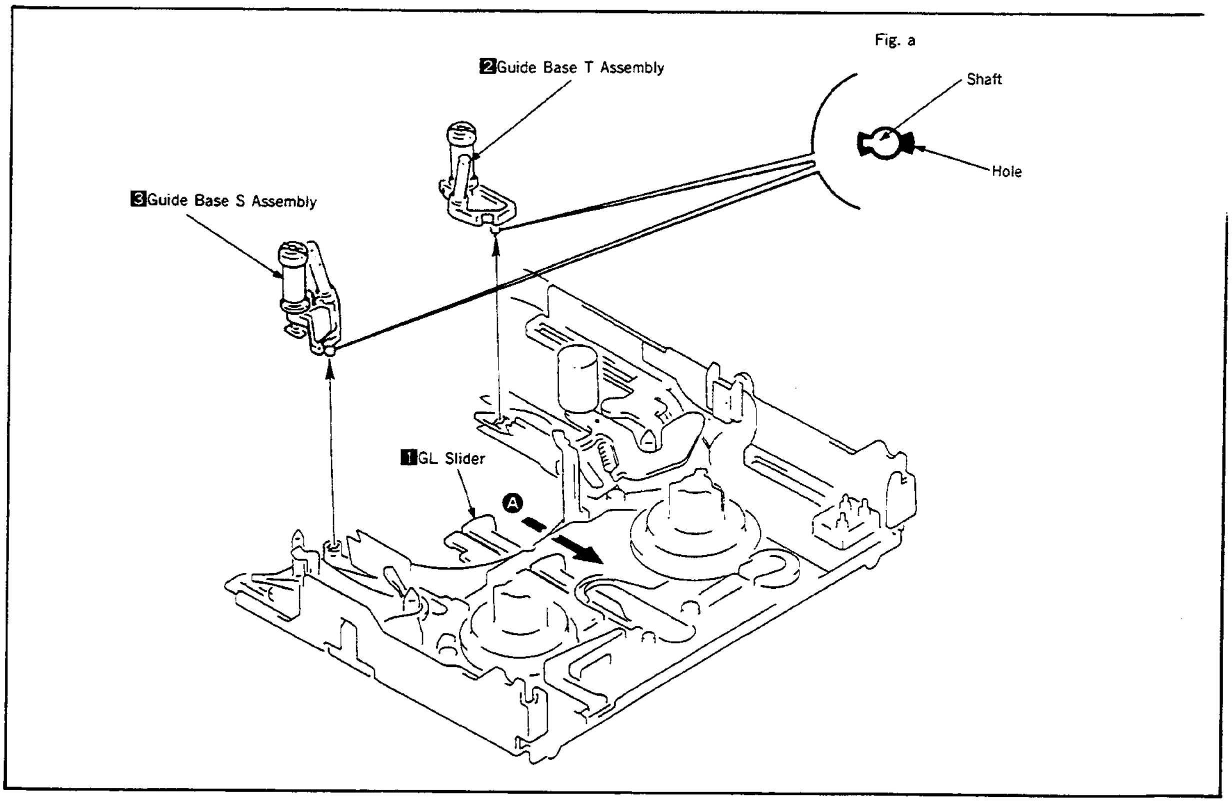


Fig. a
2 Guide Base T Assembly
Shaft
Hole
3 Guide Base S Assembly
1 GL Slider
A

Fig. 15

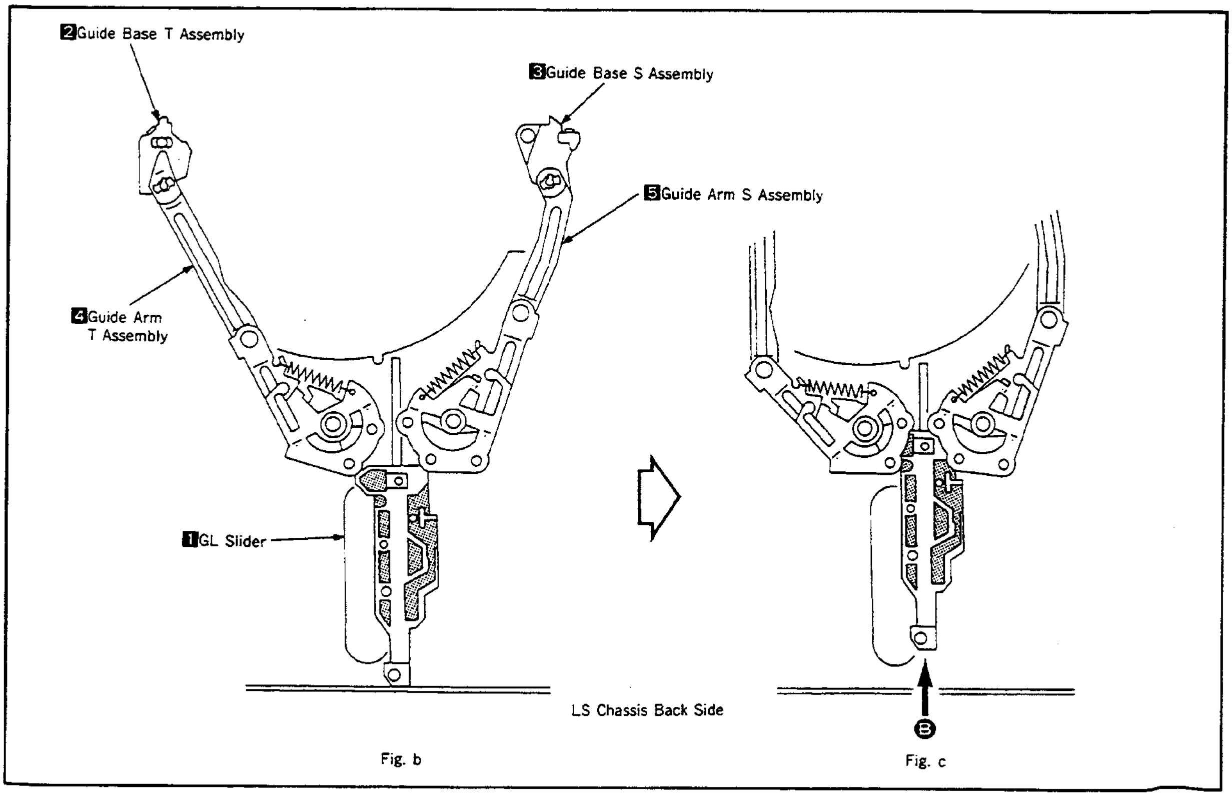

2 Guide Base T Assembly
3 Guide Base S Assembly
5 Guide Arm S Assembly
4 Guide Arm T Assembly
1 GL Slider
LS Chassis Back Side
B

Fig. b

Fig. c

Fig. 16

3 GUIDE ARM T ASSEMBLY AND GUIDE ARM S ASSEMBLY (Fig. 17)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base T assembly and guide base S assembly.
6) Remove lock washers **1**, then the guide arm T assembly **2** and guide arm S assembly **3** respectively from the back side of chassis.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assmbly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2. Mounting

1) Mount the guide arm T assembly **2** and guide arm S assembly **3**, then fix them with a lock washer **1** respectively.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2) Referring to 3-8, mount the guide base T assembly, guide-base S assembly and GL slider.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

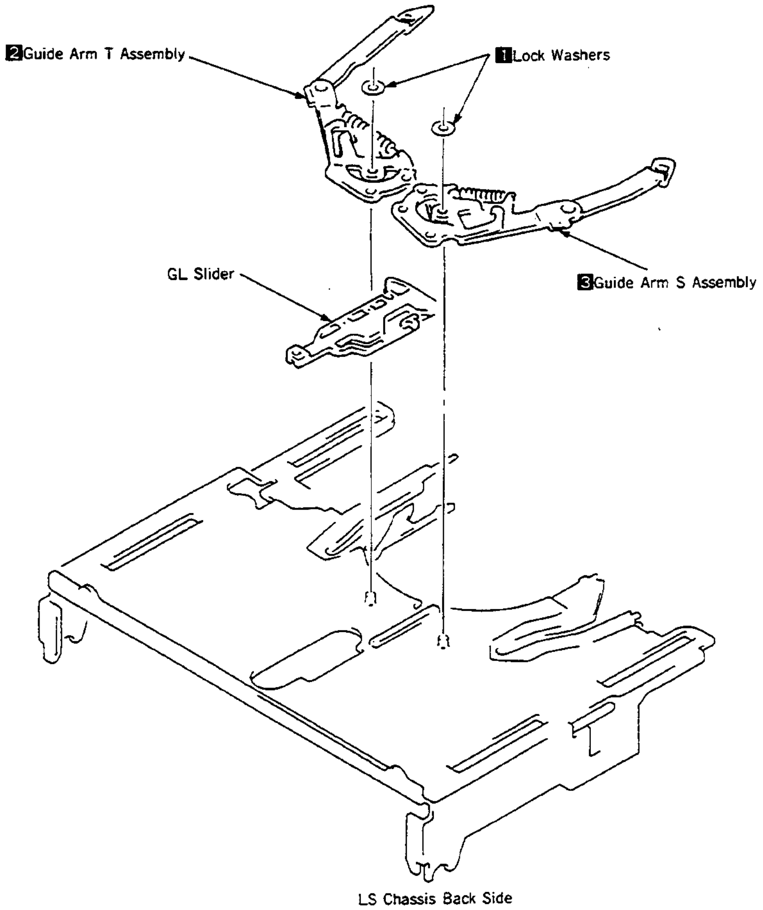


Fig. 17

3-10. SUPPLY REEL TABLE ASSEMBLY AND TG-1 ARM ASSEMBLY (Fig. 18)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base S assembly.
6) Remove a screw ❶, then the string ❷ from the supply reel table assembly ❸. For easy removal of string block ❹, insert a flat-blade screwdriver into a groove ⓐ and push it up (Fig. a).
7) Remove the supply reel table assembly ❸.
8) Remove a tension coil spring ❺.
9) Turn the TG-1 arm assembly ❻ up to a portion ⓒ of LS chassis hole in the arrow Ⓐ direction so that its tab ⓑ can be disengaged (Fig. b).

2. Mounting

1) Pushing the S soft brake ❼ toward the arrow Ⓑ, mount thesupply reel table assembly ❸.
2) Route the string ❷ under the TG-1 arm asembly ❻, andinsert the tab ⓑ of TG-1 arm assembly into the LS chassis hole ⓒ, then turn the TG-1 arm assembly in the reverse direction of arow Ⓐ (Fig. b).
3) Wind the string ❷ along the groove of supply reel t assembly ❸ (Fig. a).

Note : Do not curl the string extremely. Also, avoid adhesion oil, otherwise the image will be distorted.

4) Using the FWD B.T. adjusting driver (Ref. No. J-15), shift the string block ❹ toward the arrow Ⓒ and tighten the screw ❶ (Fig. a).
5) Engage the tension coil spring ❺ to the chassis hook.

Note : Confirm that the string ❷ is surely wound around the groove of supply reel table assembly ❸ (Fig.a).

6) Referring to 3-8, mount the guide base S assembly.
7) Referring to 3-7, mount the LS chassis assembly.
8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm. (Refer to 3-5 Take-up Reel Table Assembly and Take-up Soft Assembly.)

10) Referring to 1-1, mount the cassette compartment assembly.

Note : Referring to 3-22, adjust the tension regulator position.

Note : Referring to 3-23, adjust the forward back tension.

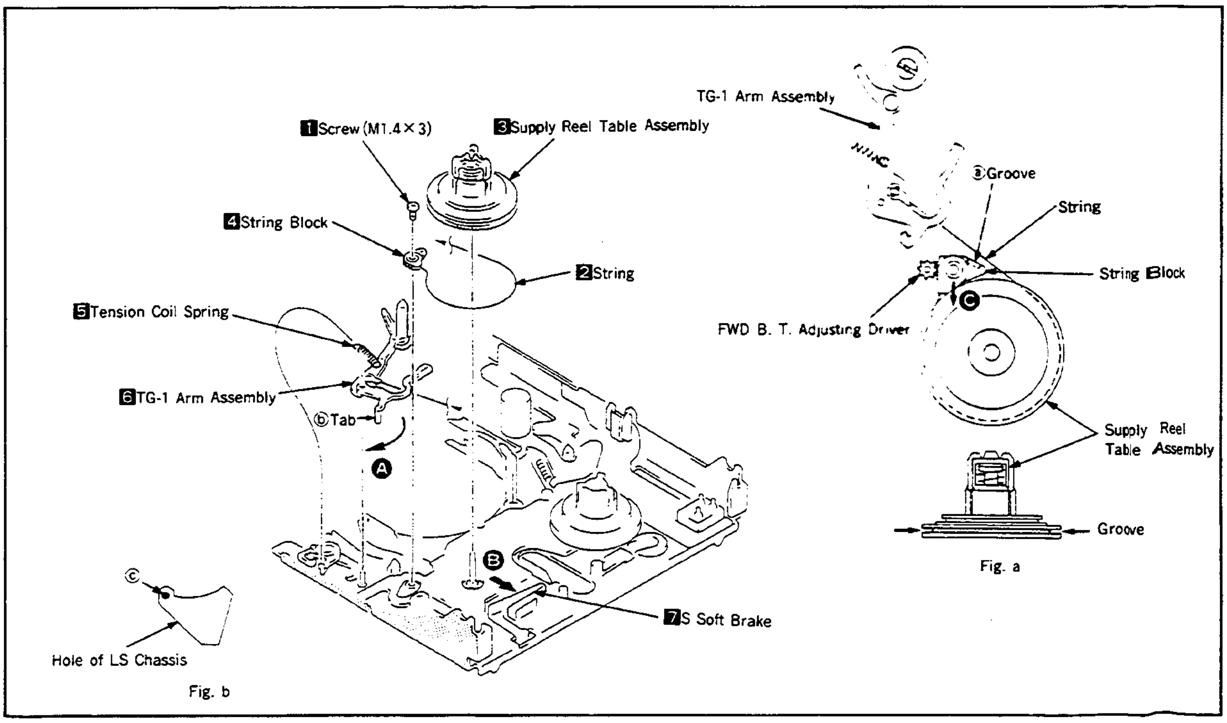

❶Screw (M1.4 × 3)
❸Supply Reel Table Assembly
❹String Block
❷String
❺Tension Coil Spring
❻TG-1 Arm Assembly
ⓑTab
Ⓐ
Ⓑ
❼S Soft Brake
ⓒ
Hole of LS Chassis
TG-1 Arm Assembly
ⓐGroove
String
String Block
Ⓒ
FWD B. T. Adjusting Driver
Supply Reel Table Assembly
Groove

Fig. b

Fig. a

Fig. 18

3 . TG-2 ROLLER ASSEMBLY (Fig. 19)

1. Removal

1) Remove the TG-2 roller assembly ❶ .
2) Remove a compression coil spring ❷ .

2.Mounting

1) Insert a compression coil spring ❷ into the boss on chassis.
2) Rotate gently the TG-2 roller assembly ❶ until the screw is engaged.

3. Presetting of TG-2 Roller Height (Fig. a)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3. 3 ± 0. 05mm.

Note : After adjustment, perform 4. TAPE PATH ADJUSTMENT.

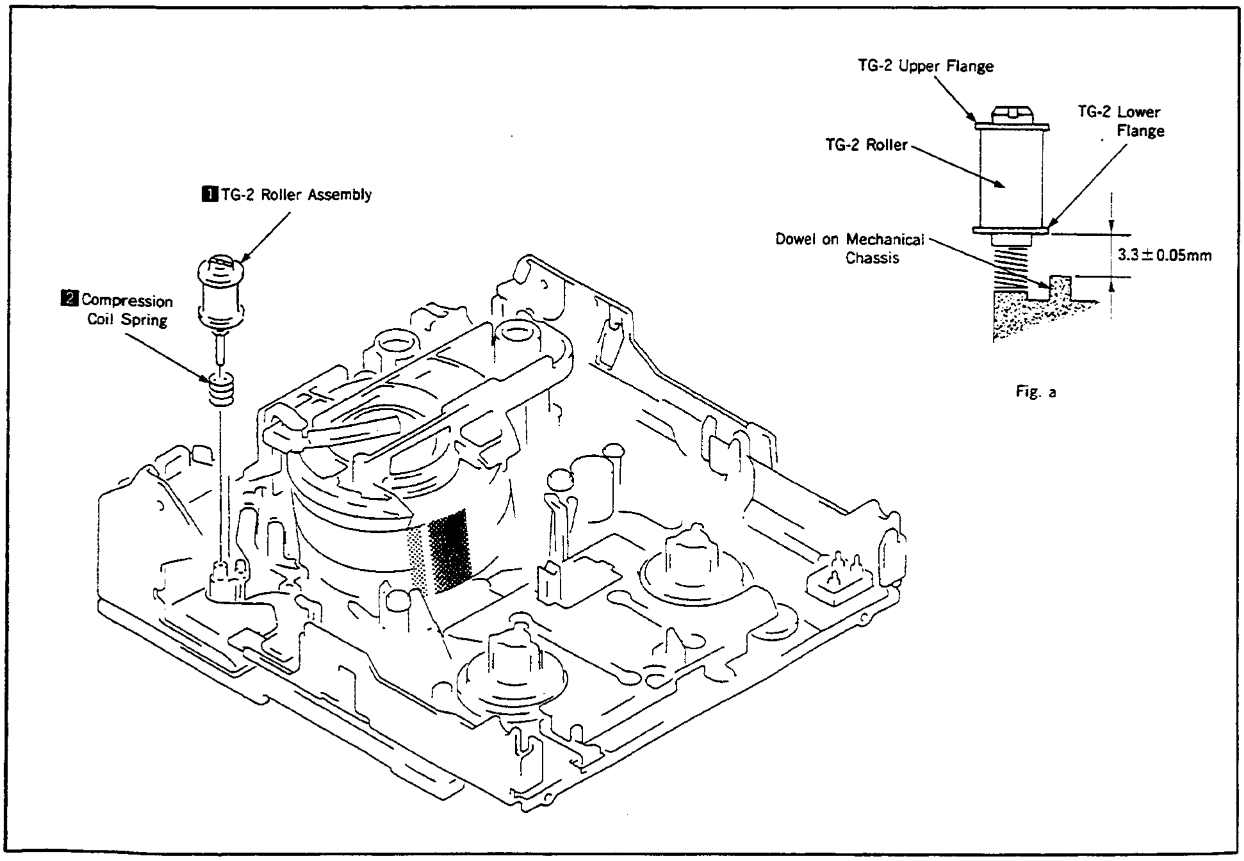

TG-2 Upper Flange
TG-2 Lower Flange
TG-2 Roller
Dowel on Mechanical Chassis
3.3±0.05mm
Fig. a
❶TG-2 Roller Assembly
❷Compression Coil Spring

Fig. 19

3-12. TG-7 ARM ASSEMBLY (Fig. 20)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Raise a portion ⓐ of TG-7 arm Leaf spring ❶ in arrow direction with a flat-blade screwdriver or tweezers to disengage the tab from the chassis, then remove the TG-7 arm Leaf spring as shown in Fig. a.
6) Remove the TG-7 assembly ❷ from the shaft of mechanical-chassis.

2. Mounting

1) Mount the TG-7 arm assembly ❷ to the shaft of mechanic chassis.
2) Mount the TG-7 arm Leaf spring ❶ to the mechanicalchassis.
   - *Push in the tab of Leaf spring until it clicks into a detent ofchassis (Fig. a).
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartmnet assembly.

Note : After mounting, perform 4. TAPE PATH ADJUSTMENT.

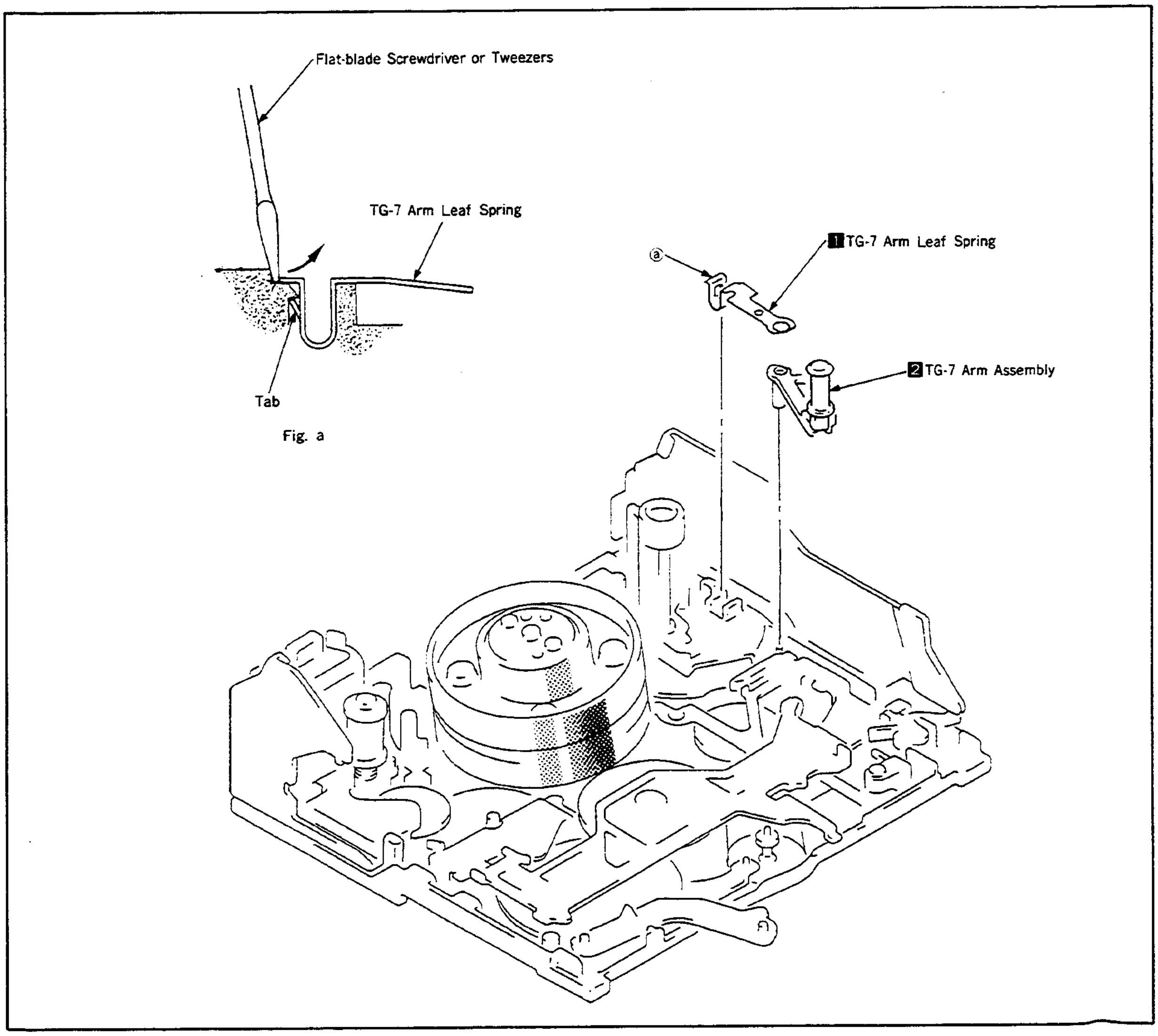


Fig. 20

3 . LM MOTOR ASSEMBLY (Fig. 21)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Select the LOAD mode (at the position where the FF arm assembly is not above the screw ❶).
6) Remove two screws ❶, then the LM motor assembly ❷.

2. Mounting

1) Aligning the dowel ⓐ of LM motor assembly ❷ with the hole ⓑ of mechanical chassis, mount the LM motor assembly with its hole ⓒ inserted into the mechanical chassis shaft ⓓ.
2) Tighten two screws ❶.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

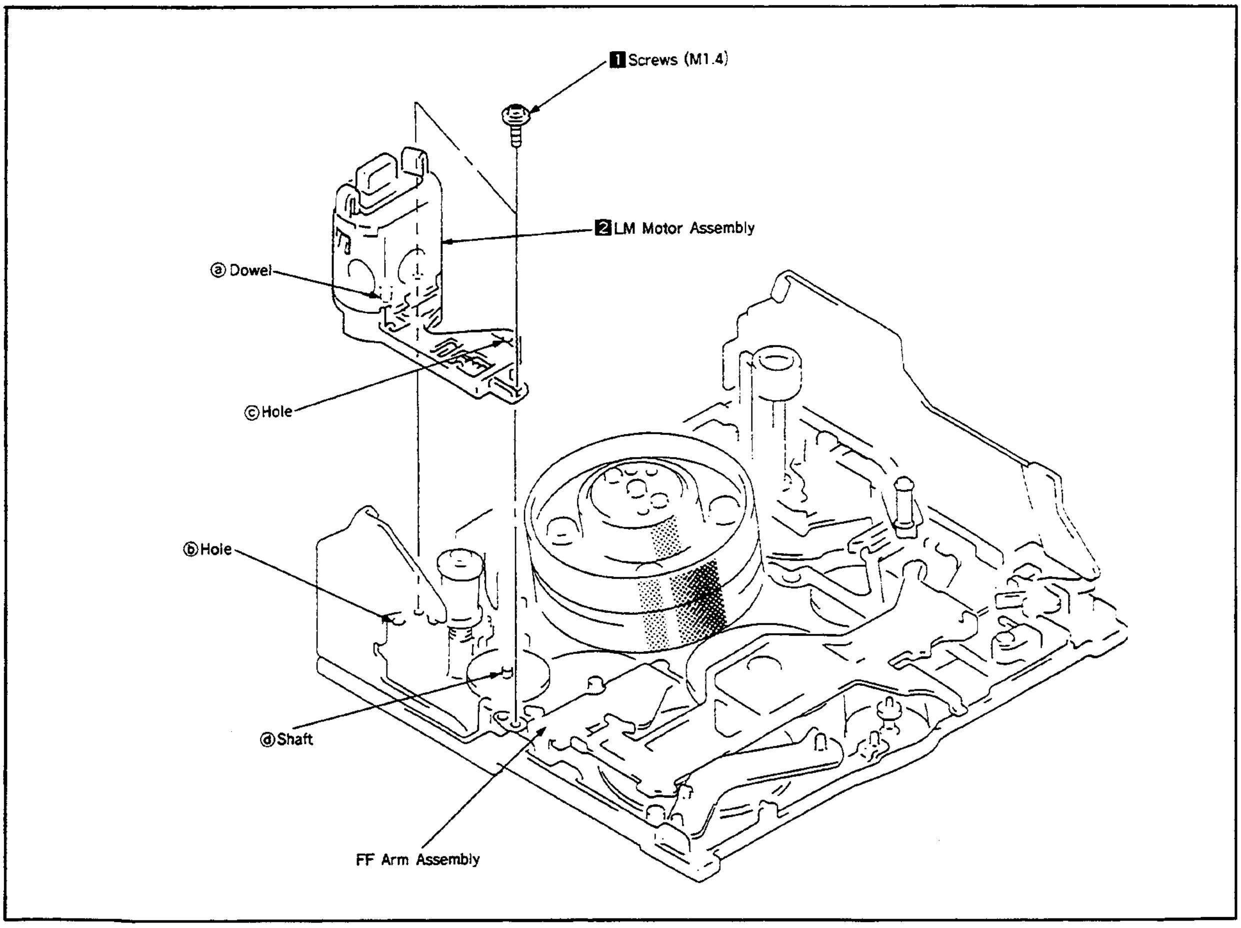


Fig. 21

3-14. LS ARM (Fig. 22)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the proctector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove the LS arm ❶ from the shaft of mechanical chassis.

Note : Take care not to drop the LS roller ❷.

2. Mounting

1) Mount the LS arm ❶ meeting with mechanical chassis sh. and cam groove.

Note : Move the LS arm ❶ in arrow direction to confirm that the LS roller ❷ is surely inserted.

2) Referring to 3-7, mount the LS chassis assembly.
3) Referring to 3-2, mount the protector base assembly.
4) Referring to 3-1, mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

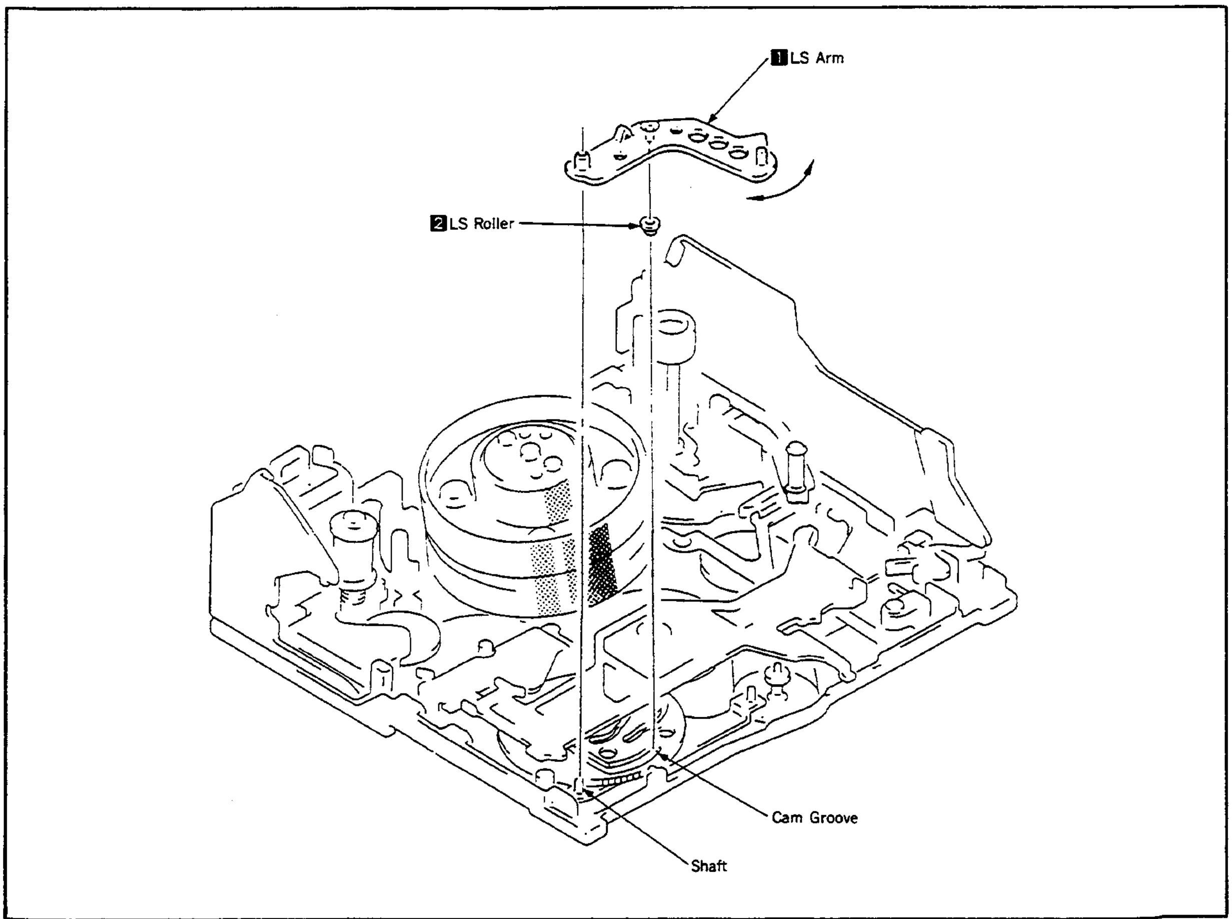


Fig. 22

. M SLIDER ASSEMBLY (Fig. 23)

emoval

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove two screws ❶, then the gear holder ❷.
6) Remove two lock washers ❸, then the M slider assembly ❹.

2. Mounting

1) Mount the M slider assembly ❹, aligning long holes ⓐ and ⓑ of M slider assembly with shafts ⓒ and ⓓ of mechanical chassis, and a long hole ⓔ with shaft ⓕ of press arm assembly, and also shaft ⓖ with outer groove ⓗ of cam respectively.
2) Mount two lock washers ❸.
3) Mount the gear holder ❷ with its outserts ⓘ and ⓘ inserted into holes in the mechanical chassis.
4) Tighten two screws ❶.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

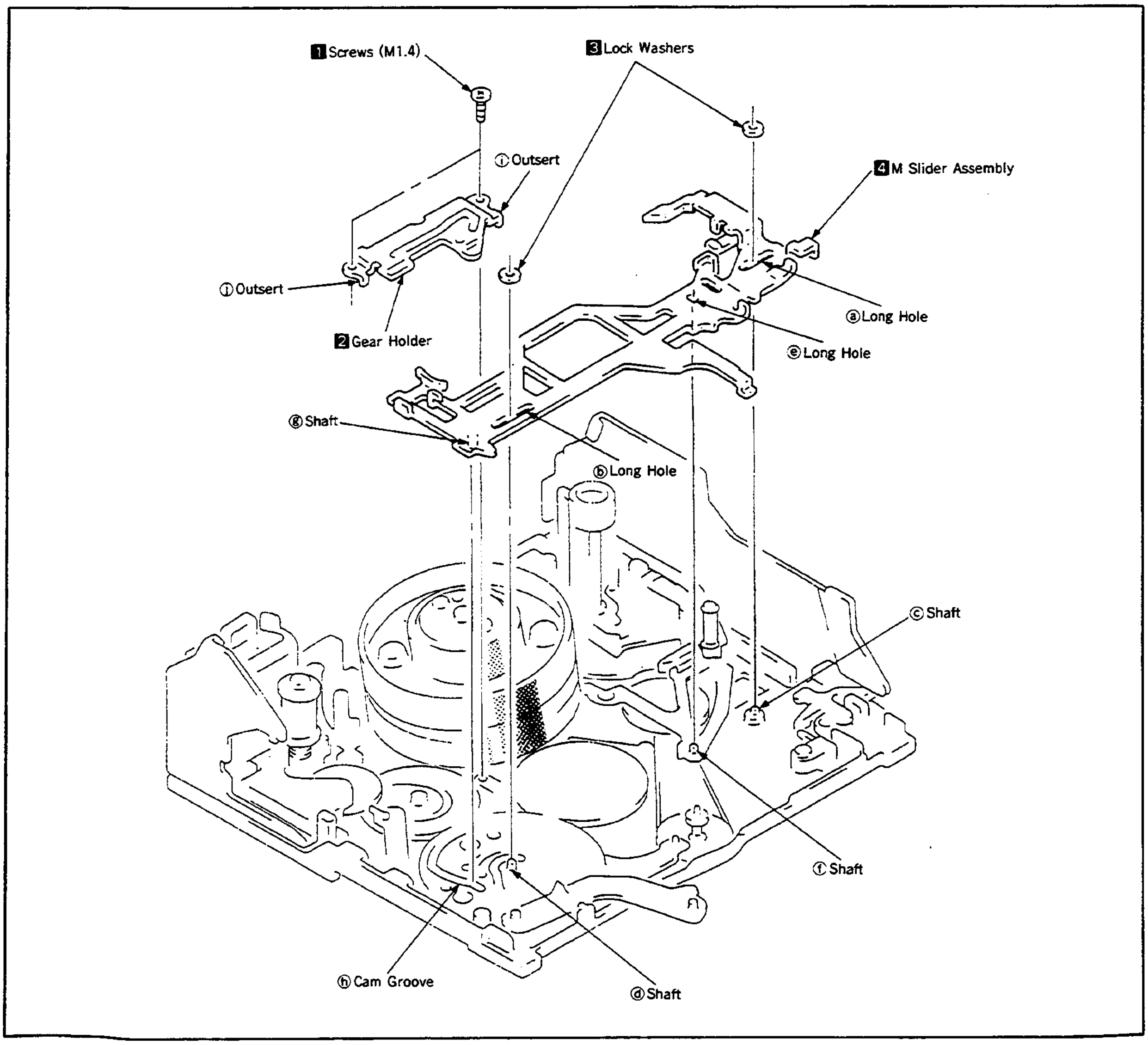

❶Screws (M1.4)
❸Lock Washers
ⓘOutsert
❹M Slider Assembly
ⓘOutsert
ⓐLong Hole
❷Gear Holder
ⓔLong Hole
ⓖShaft
ⓑLong Hole
ⓒShaft
ⓕShaft
ⓗCam Groove
ⓓShaft

Fig. 23

3-16. PINCH PRESS ARM ASSEMBLY (Fig. 24)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assemvly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove a lock washer ❶, then pinch press arm assembly ❷.

2.Mounting

1) Mount the pinch press arm assembly ❷, inserting its sh ⓐ into the cam groove ⓑ of HC drive arm, and hole ⓒ in the shaft ⓓ of mechanical chassis.
2) Mount the lock washer ❶.
3) After mounting, shift the pinch press arm assembly toward the arrow direction.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-3, mount the drum assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

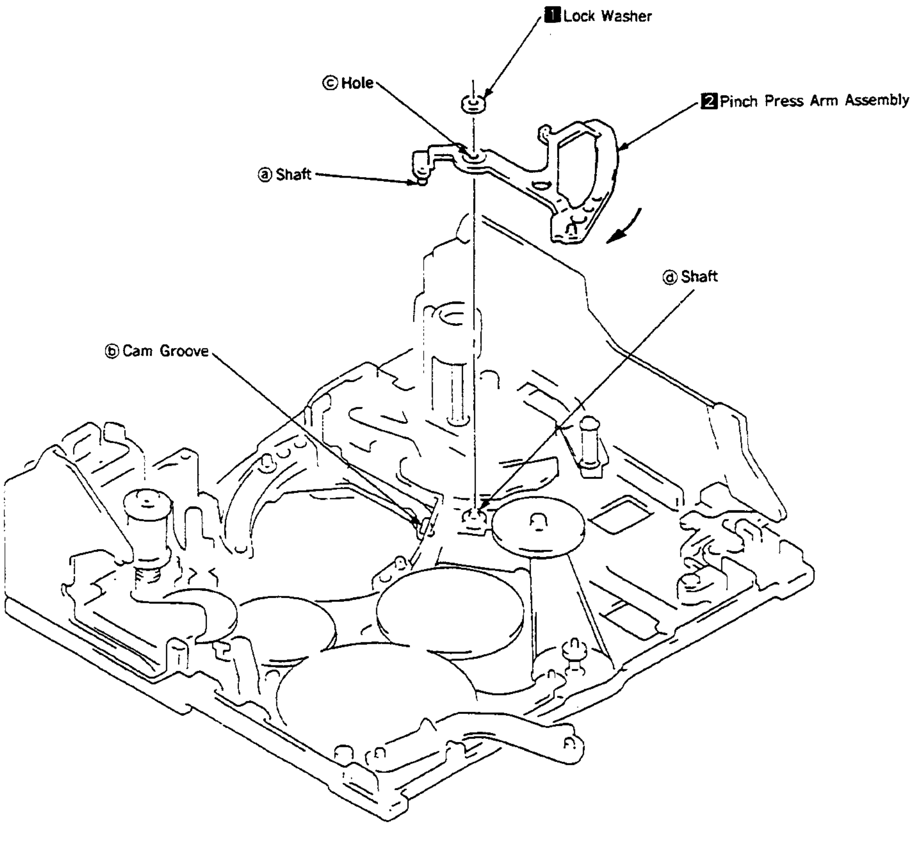


Fig. 24

. CAM (Fig. 25)

emoval

Referring to 1-1, remove the cassette compartment assembly.

Referring to 3-1, remove the Retainer, Gooseneck assembly.

Referring to 3-2, remove the protector base assembly.

4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove the cam ❶.

2. Mounting

1) Referring to 3-13, remove the LM motor assembly.

Note : Take care not to allow grease of LM motor assembly to stick to the TG-2 roller assembly.

2) Mount the cam ❶, aligning its center hole with shaft of mechanical chassis, and the cam groove with the shaft of GL arm assembly. At this time , make sure that the ▲ mark on L gear B is aligned with that on the cam and also a recess is aligned with the phase aligning hole respectively as shown in Fig. a.

Note : Apply grease to the cam groove if it scarecely remains.

3) Mount the LM motor assembly.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-14, mount the LS arm assembly.
6) Referring to 3-7, mount the LS chassis assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

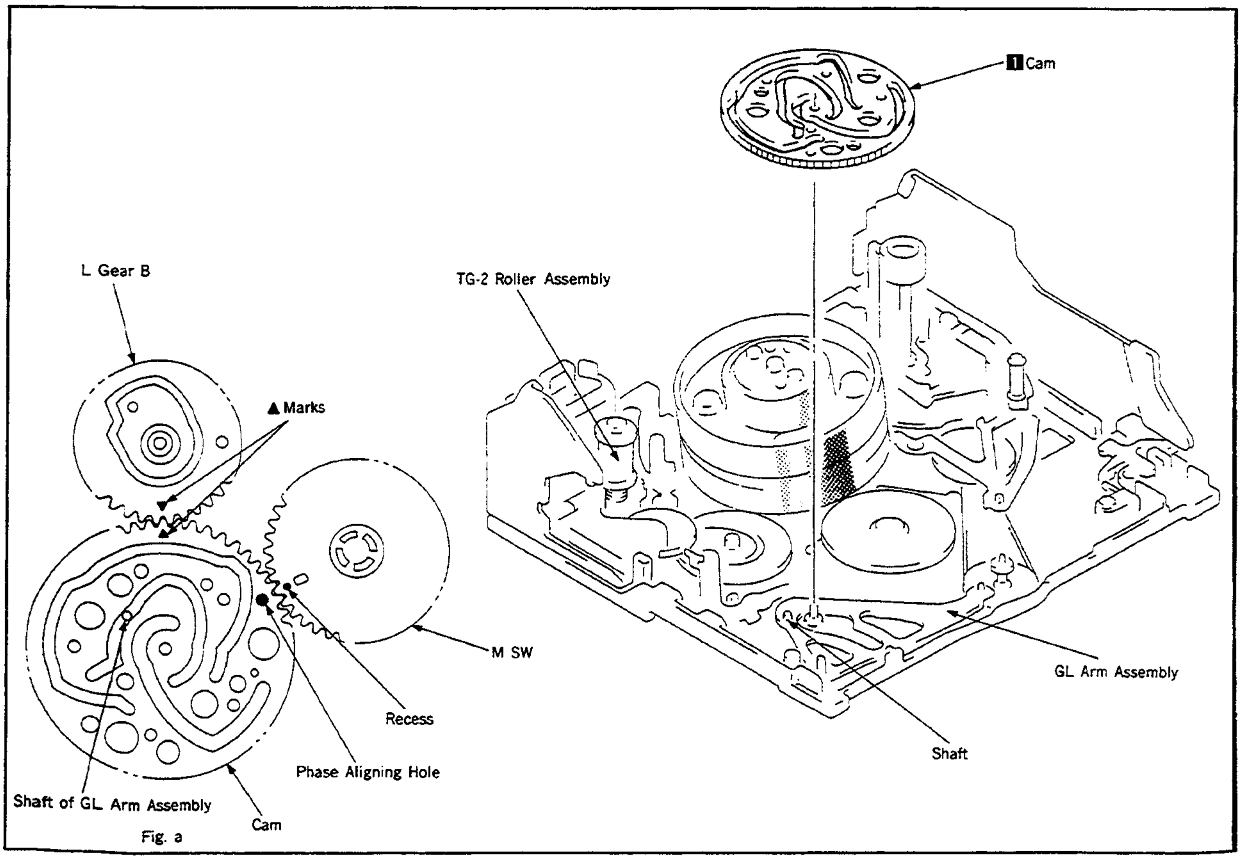


Fig. a

Fig. 25

3-18. GL ARM ASSEMBLY (Fig. 26)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Remove the GL arm assembly **1**.

2. Mounting

1) Mount the GL arm assembly **1** with its hole ⓐ inserted in the shaft ⓑ of mechanical chassis.
2) Referring to 3-17, mount the cam.
3) Referring to 3-15, mount the M slider assembly.
4) Referring to 3-14, mount the LS arm assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

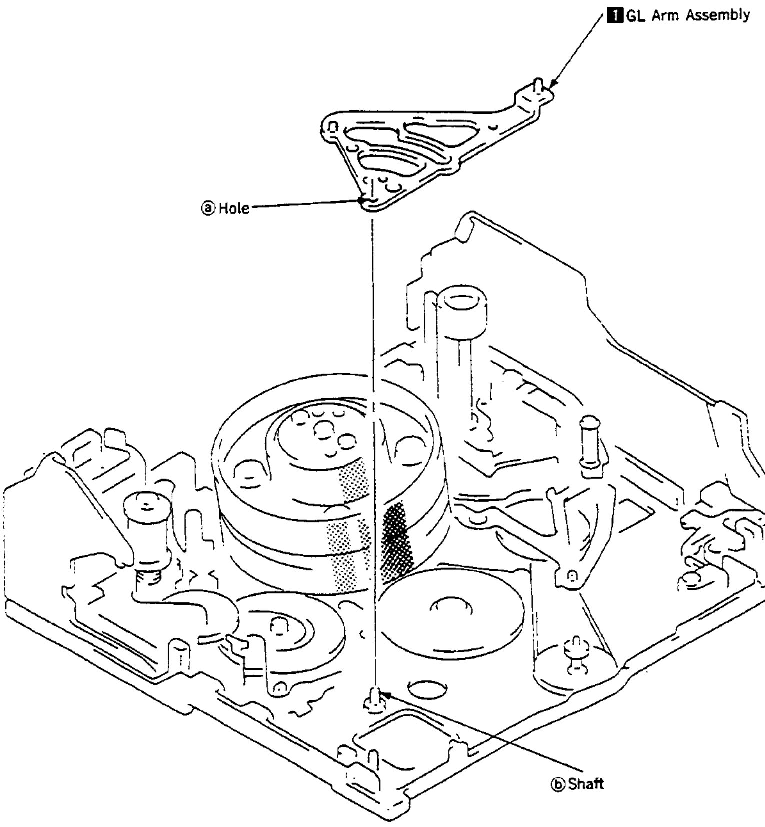


Fig. 26

9. L GEAR A AND L GEAR B (Fig. 27)

Removal

- Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Referring to 3-13, remove the LM motor assembly.
9) Remove the FF arm assembly ❶.
10) Remove the L gear A ❷.
11) Remove the L gear B ❸.

2. Mounting

1) Insert the L gear B ❸ into the shaft of mechanical chassis. (At this time, the phase aligning mark ▲ should be faced toward the cam mounting shaft ⓐ.)
2) Insert the L gear A ❷ into the shaft of mechanical chassis.
3) Mount the FF arm assembly ❶ with its two shafts inserted into the cam groove of L gear B ❸ and the hole of mechanical chassis.
4) Referring to 3-17, mount the cam.
5) Referring to 3-13, mount the LM motor assembly.
6) Referring to 3-15, mount the M sleder assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-2, mount the protector base assembly.
10) Referring to 3-1, mount the Retainer, Gooseneck assembly.
11) Referring to 1-1, mount the cassette compartment assembly.

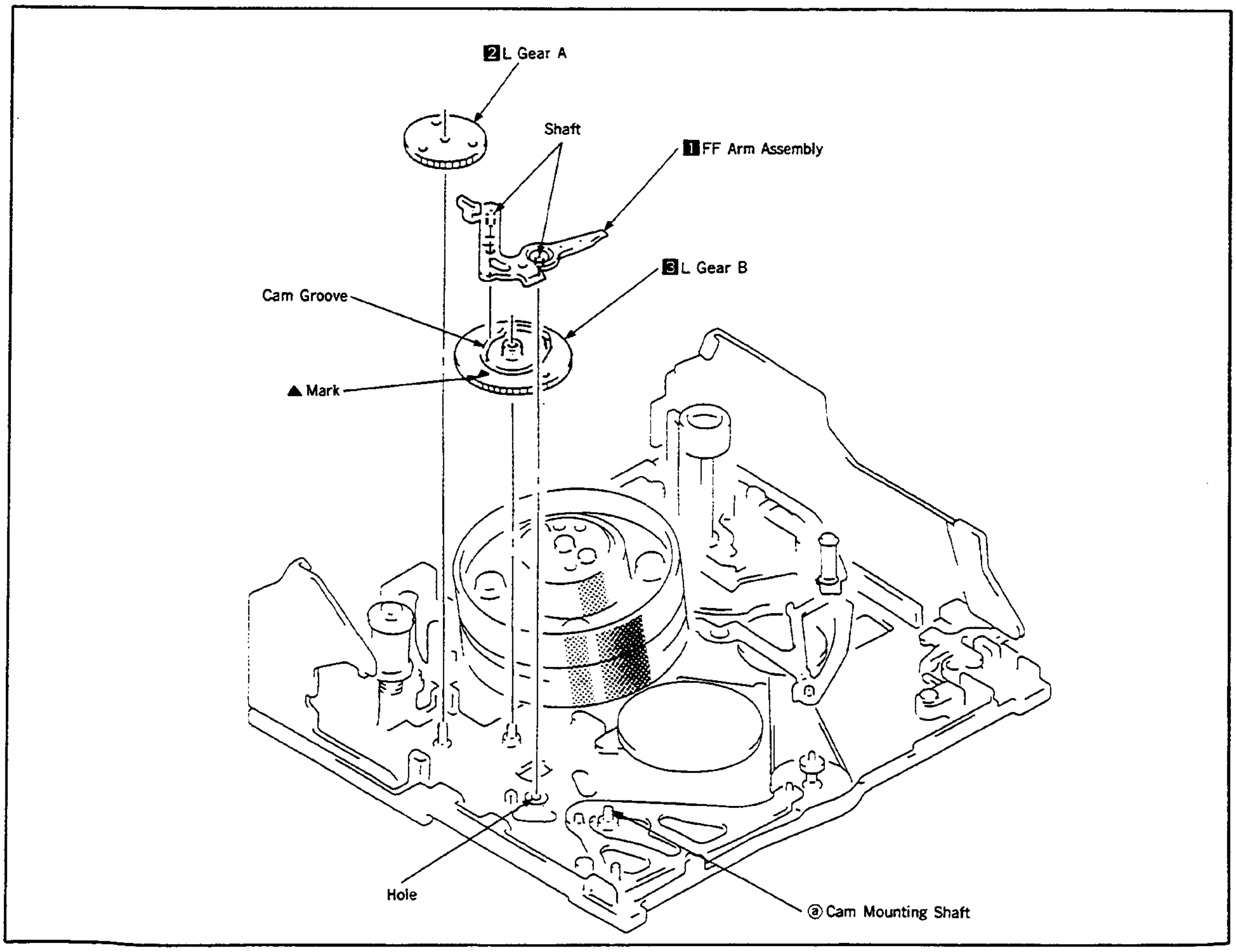


Fig. 27

3-20. RELAY PULLEY AND CHANGE GEAR ASSEMBLY (Fig. 28)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assembly.
6) Referring to 3-14, remove the LS arm assembly.
7) Referring to 3-15, remove the M slider assembly.
8) Referring to 3-17, remove the cam.
9) Referring to 3-18, remove the GL arm assembly.
10) Referring to 3-16, remove the pinch press arm assembly.
11) Remove a lock washer ❶, then remove together the Change gear assembly ❷, relay belt ❸ and relay pulley ❹.

2. Mounting

*Give one or two drips of oil to the conversion gear shaft and relay pulley shaft respectively. (Oiling range is under the neck as shown in Fig. a.)

1) Hooking the relay belt ❸ to the relay pulley ❹ and Change gear assembly ❷, mount respective parts.
   * At first, insert the relay pulley into the mechanical chassis-shaft, then the change gear assembly by engaging with the capstan motor gear.

Note : Take care not to damage the Change gear by the capstan motor gear.

2) Mount a lock washer ❶.
3) Referring to 3-16, mount the pinch press arm assembly.
4) Referring to 3-18, mount the GL arm asembly.
5) Referring to 3-17, mount the cam.
6) Referring to 3-15, mount the M slider assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-3, mount the drum assembly.
10) Referring to 3-2, mount the protector base assembly.
11) Referring to 3-1, mount the Retainer, Gooseneck assembly.
12) Referring to 1-1, mount the cassette compartment assembly.

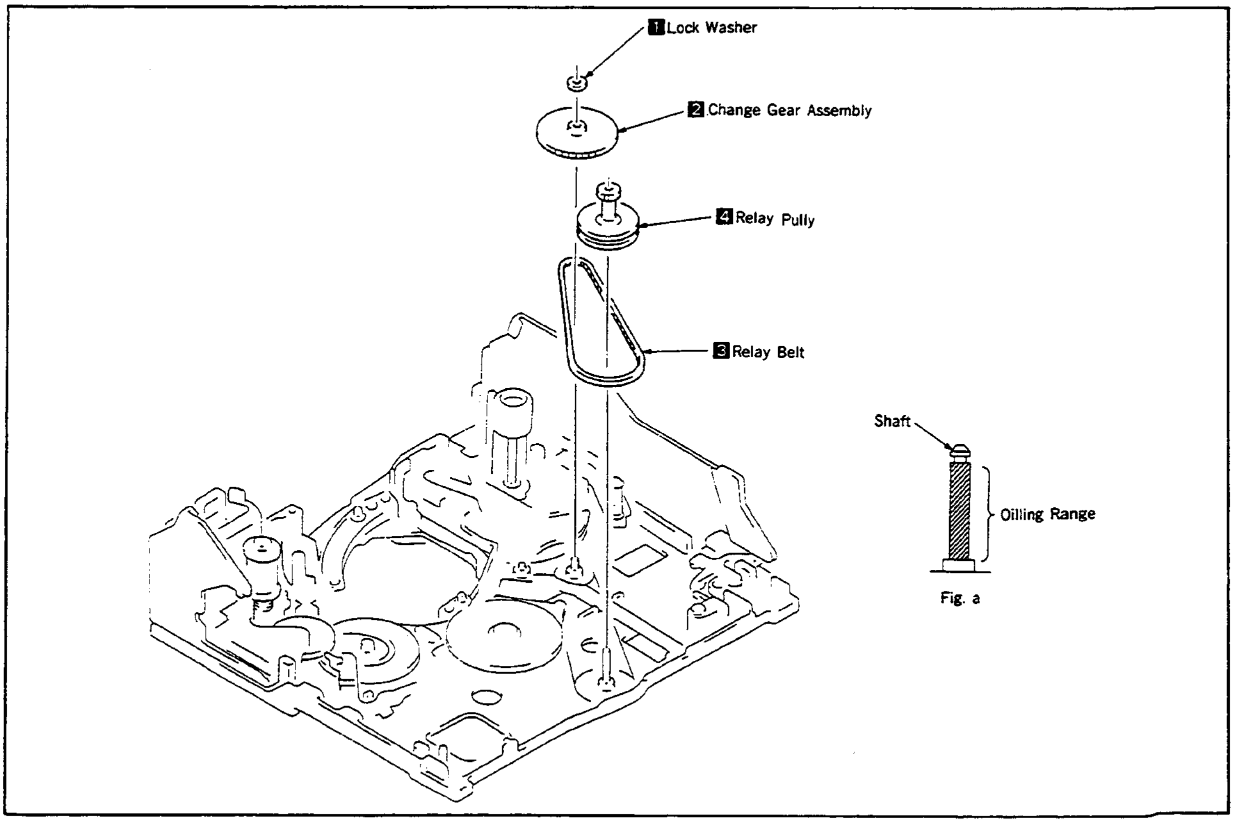


Fig. 28

3-21. ROTARY UPPER DRUM REPLACEMENT

1. Removoal

- If possible, make a recording before removal.

1) Remove the two screws 1 (Fig. 29).
2) Mount the jig 2 (Ref. No. J-10) with the two supplied screws 3, then screw the attached hexagon socket screws 4 to the jig 2. The rotary upper drum 5 will move upward and come off (Fig. 30).

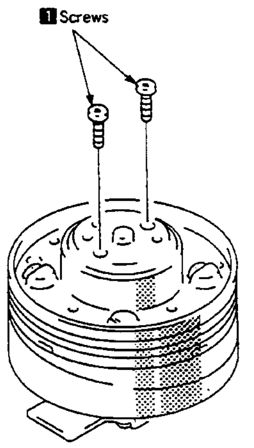


Fig. 29

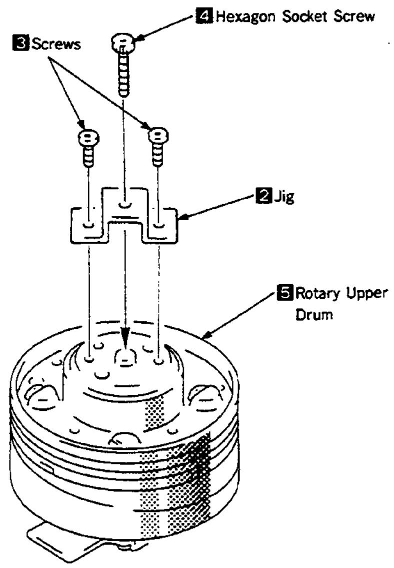


Fig. 30

2. Installation

1) Wipe clean the flange surface and the rotary upper drum 5 surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig 6 (Ref. No. J-10) into the drum positioining hole, then set then set the rotary upper drum 5 by passing the jig through its positioning hole 7. (Fig.31)
3) Remove the jig 6 and push down the rotary upper drum 5 gently by hand. If it does not go all the way down, secure it temporarily by tightening the two screws 1 alternately (Fig.29).
4) Insert the jig 6 into the positioning hole 7 again and confirm that it goes in smoothly. If it does not, loosen the two screws 1, repeat step 2) of the Removal paragraph and restart the setting procedure.
5) Tighten the screws 1.

Note : After installing, be sure to perform tape path adjustment as described in section 4.

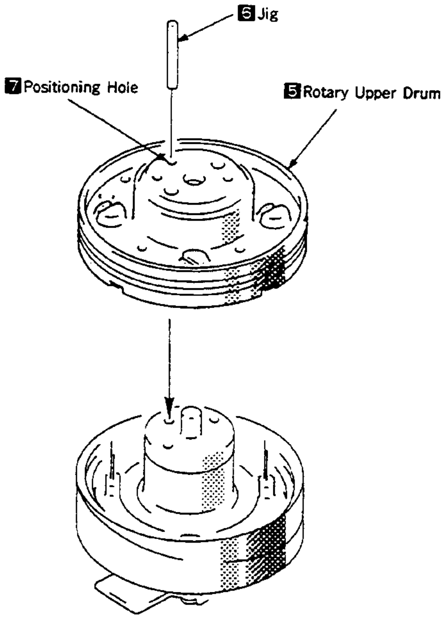


Fig. 31

3-22. ADJUSTMENT OF TENSION REGULATOR POSITION (Fig. 32)

1. Adjustment

1) Set a cassett tape and run the tape in the PB mode.
2) With the tape running, check that the distance from No.1 guide to No. 2 guide upper flange is 4.2 mm.
3) If they are not at the specified positions, perform adjustment in step 4) and subsequent steps.
4) Loosen the screw ❶.
5) If No.1 guide is located inside the specified position, shift the string block toward the arrow 🅐 using the FWD B.T. adjusting driver (Ref No. J-15). Or, if it is located outside, shift toward the arrow 🅑.
6) Tighten the screw ❶.

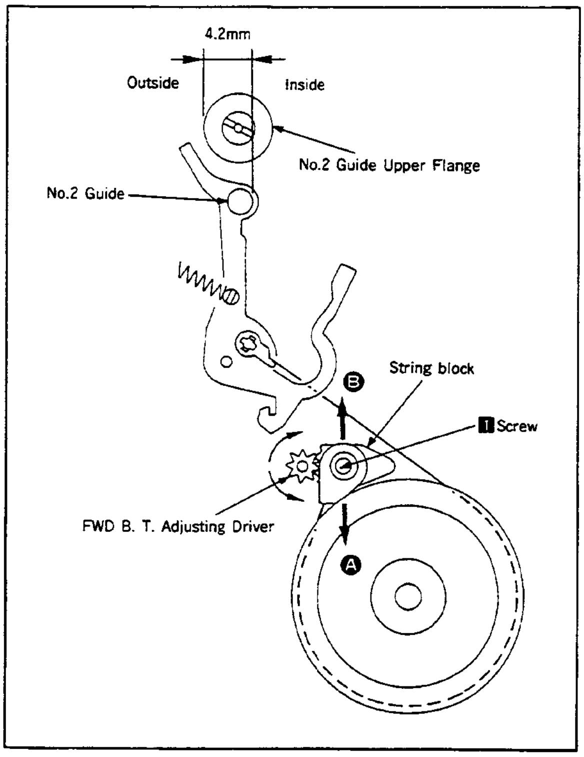

4.2mm
Outside
Inside
No.2 Guide Upper Flange
No.2 Guide
🅑
String block
❶ Screw
FWD B. T. Adjusting Driver
🅐

Fig. 32

3-23. FWD BACK TENSION ADJUSTMENT (Fig.33)

1) Select the TEST mode 1 using the adjusting remote controller (Ref No. J-17).
2) Set the torque cassette (Ref No.J-10).
3) Select the FWD mode, and check that the torque of S reel table is 8.5 ~ 11.5 g · cm.
   If it is out of standard, adjust the TG-1 spring hook position using the FWD B.T. adjusting driver (Ref No. J-15).

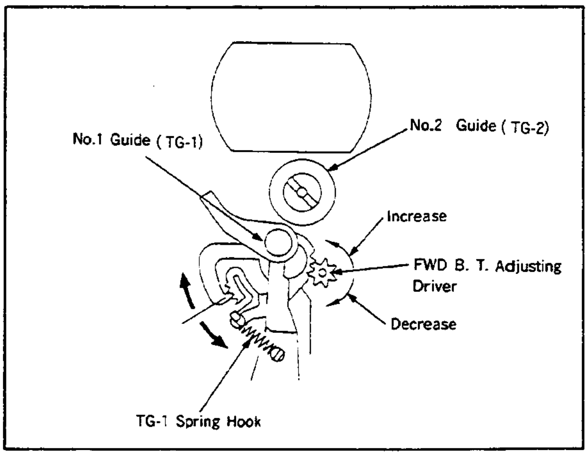

No.1 Guide (TG-1)
No.2 Guide (TG-2)
Increase
FWD B. T. Adjusting Driver
Decrease
TG-1 Spring Hook

Fig. 33

3-24. REEL TORQUE CHECK

1) Set the torque cassette.
2) Select the FWD mode, and check that the torque fluctuation center of T reel table is 7 ~ 17 g · cm
3) Select the REV mode, and check that the torque fluctuation center of S reel table is 25 ~ 39 g · cm.
4) Select the REV mode, and check that the torque of T reel table is 7 ~ 17 g · cm.
5) If the above data is not satisfied, the tension regulator band, T hard tab or T soft assembly will be faulty. Check them first, and if no abnormality is found, replace respective reel tables.

4. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.
This does away a tracking control knob and allows accurate track tracing.
On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF automatically corrects it, which means that perfect adjustment cannot be done.
Therefore, in the A mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode with the adjusting remote controller (Ref No.J-16). So, fine tracking adjustment can be easily done. Also, the PATH mode setting varies with the model, and therefore, refer to the Service Manual.

Example) For CCD-FX410 series
Set the adjusting remote controller to the HOLD ON side.

1) Set PAGE : 1, ADDRESS : 00, DATA : 01 to cancel the PROTECT mode.
2) Set PAGE : D, ADDRESS : 01, DATA : 03 to select the PATH mode.

Note : Setting of PATH mode = TRACK SHIFT mode
If the adjusting remote controller (Ref No.J-16) is set to HOLD OFF once, then set to HOLD ON again after mode setting, the display of ADDRESS and DATA changes.

3) After adjustment is over, set DATA : 00, and press the PAUSE buttom on the adjusting remote controller (Ref No. J-16).

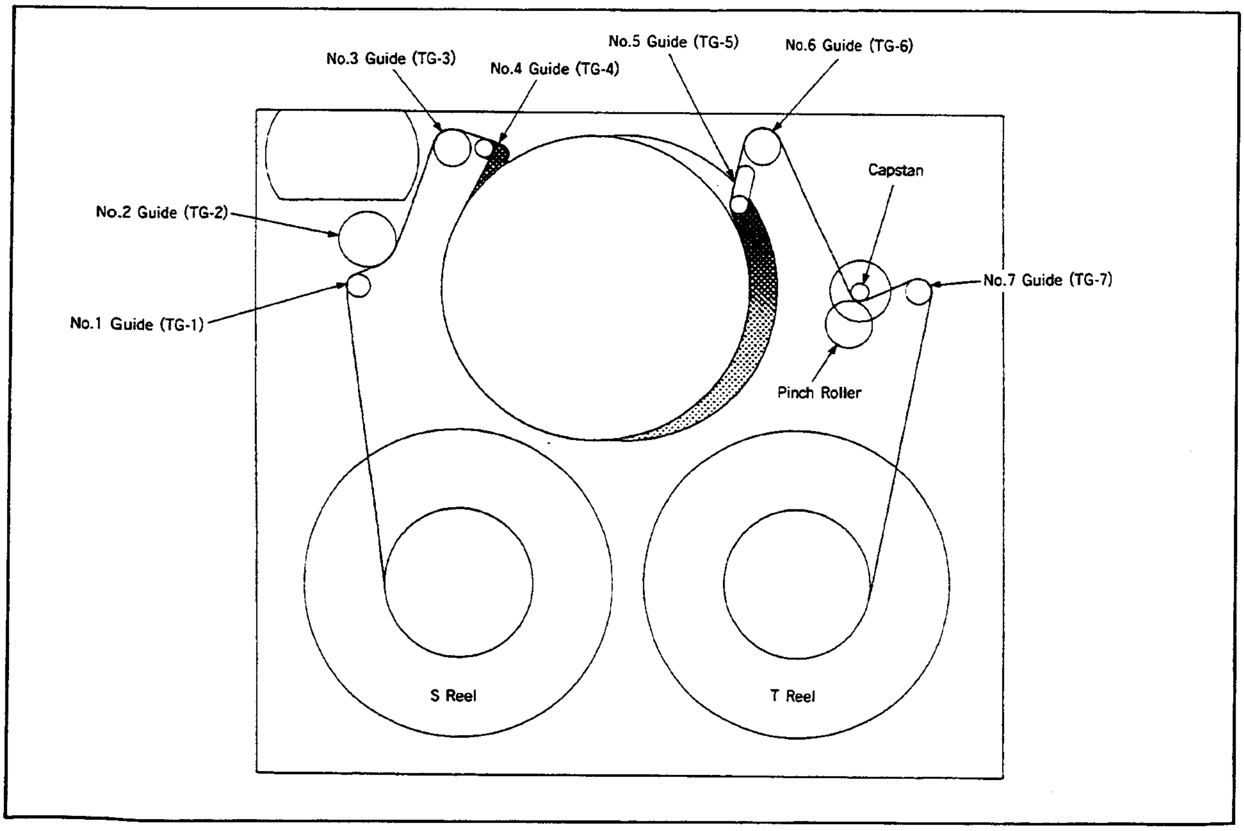


Fig. 34-A

[Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig.41).

Therefore, when performing section 4-4. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-6), modified as follows, and perform adjustment in playback mode.

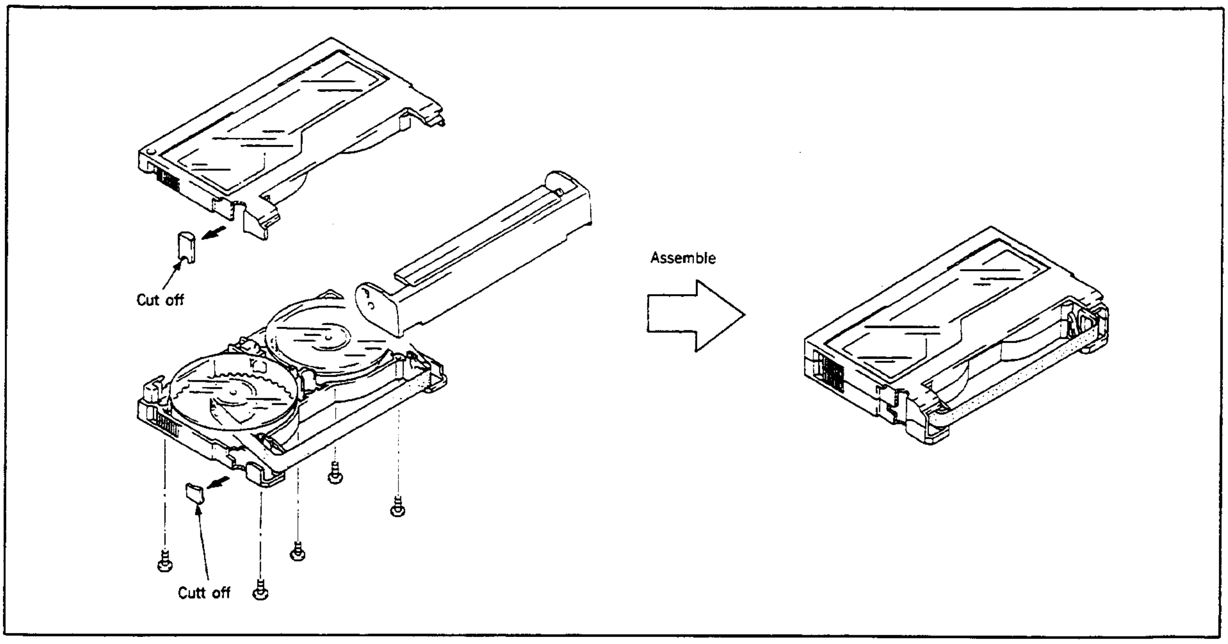


Fig. 34-B

4-1. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surface (tape guides, drum, capstan shaft, pinch roller) (Fig. 34-A).
2) Set the PATH mode using the adjusting remote controller.
3) connect an oscilloscope to the check pin connector of the set.
   Example) For CCD-FX410 series
   CH1 : CN001 pin ③ (PB RF OUT) on CS-31 board
   CH2 : CN001 pin ④ (RF SWP) on CS-31 board
4) Play back a tracking alignment tape (NTSC : WR5-1N, or PAL : WR5-1C).
5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope (Fig. 35 ⓐ).
   If not flat, make adjustment with the procedures below.
   When the RF waveform is not flat at the inlet/outlet ; See Fig. 35 ⓑ and ⓒ.

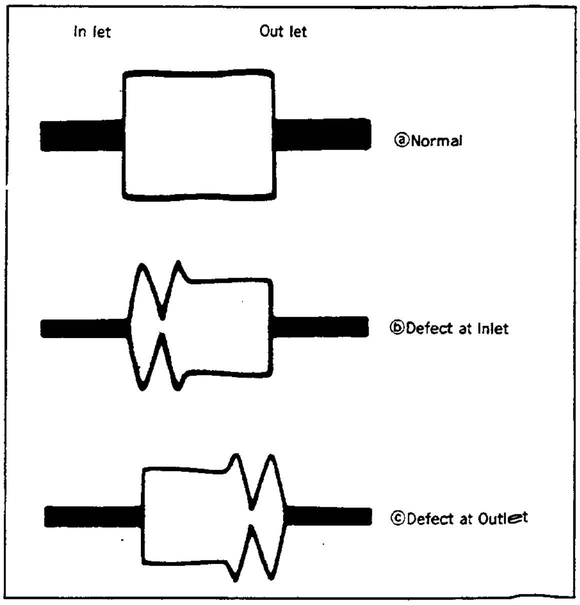


Fig. 35

4-2. TRACKING ADJUSTMENT (Fig. 36, 37)

1) Play back the tracking alignment tape.
2) Loosen the No.3 guide (TG-3) lock screw 1 and turn the No.3 guide to flatten the waveform at the inlet.
3) Tighten the No.3 guide (TG-3) lock screw 1 to lock the No.3 guide.
4) Loosen the No.6 guide (TG-6) lock screw 2 and turn the No.6 guide to flatten the waveform at the outlet.
5) Tighten the No.6 guide (TG-6) lock screw 2 to lock the No.6 guide. When this is done, make sure that the waveform does not change at the outlet.

Note : Be careful not to loosen the lock screw too much because the guide is easily moved.
: Take care not to allow interference between No.6 guide and drum when tightening the No.6 guide lock screw.

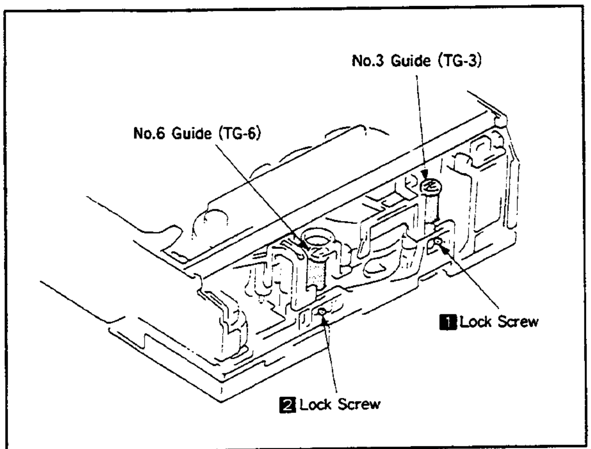


Fig. 36

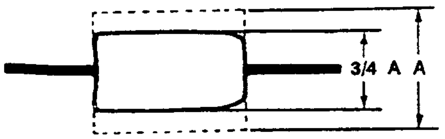


Fig. 37

4-3. No.2 GUIDE (TG-2) ADJUSTMENT

When the No.2 guide has been turned or replaced, perform height presetting before this adjustment.

4-3-1. No. 2 GUIDE (TG-2) HEIGHT PRESETTING (Fig. 38)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3.3 ± 0.05 mm.

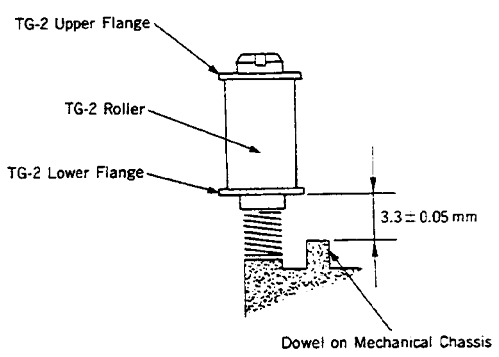


Fig. 38

[Reference]
This A mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7) . To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

Guide	Guide adjustment	Rotating direction of adjustment screw
TG-2, 3, 6	Raise	Counterclockwise
	Lower	Clockwise
TG-7	Raise	Clockwise
	Lower	Counterclockwise

4-3-2. No. 2 GUIDE (TG-2) ADJUSTMENT (Fig. 39, 40)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange **2** of the No.2 guide (TG-2) **1** (Fig. 39). If it is, turn the upper flange **3** of the No.2 guide (TG-2) clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and trcking fine adjustment as described in sections 4-2.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (Fig. 40), turn the upper flange **3** of the No. 2 guide (TG-2) **1** 90° counterclockwise and repeat step 5.
   Repeat steps 5) and 6) until a normal waveform is obtained.
   Then, confirm that the tracking waveform has not changed.
   If it has, perform fine adjustment of entrance side tracking and repeat step 5).

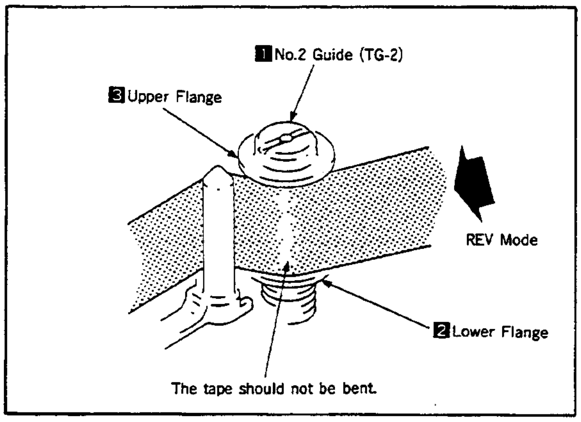


Fig. 39

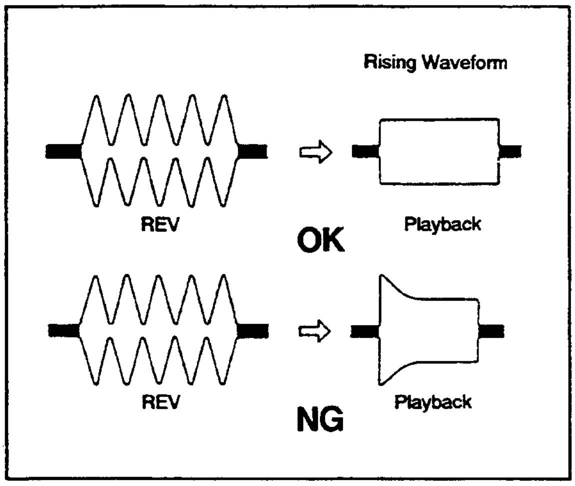


Fig. 40

4-4. No.7 GUIDE (TG-7) ADJUSTMENT (Fig. 41)

Note : This adjustment requires the No. 7 guide adjusting cassetetape (Fig. 34-B).

1) Play back the No.7 guide adjusting cassetetape and set the REV mode.
2) Confirm that the tape is not bent between the No.6 guide (TG-6) **1** and the capstan **2**. If it is, turn the hight adjusting screw **4** of the No.7 guide (TG-7) **3** until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan **2** and the hight adjusting screw **4** of the No.7 guide (specification : 0.5mm or less). If the tape is bent beyond the specification, turn the No.7 guide (TG-7) **3** until bending is within the specification (0.5mm).
   If in the REV mode tape bending between the No. 6 guide (TG-6) **1** and the capstan **2** is 0.3mm or less, adjustment can be considered completed.

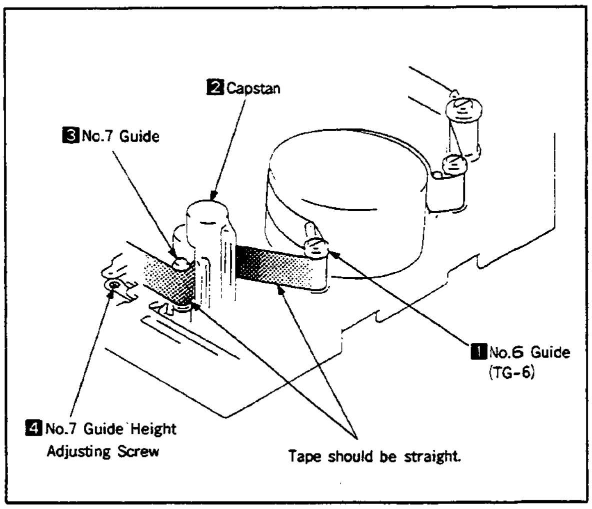


Fig. 41

4-5. CUE AND REV WAVEFORM CHECK (Fig. 42)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (Fig. 42). In case pitch is not constant, perform section 4-2.Tracking Fine Adjustment and section 4-4. No.7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (Fig. 42).
   Otherwise, perform section 4-2 Tracking Fine Adjustment.

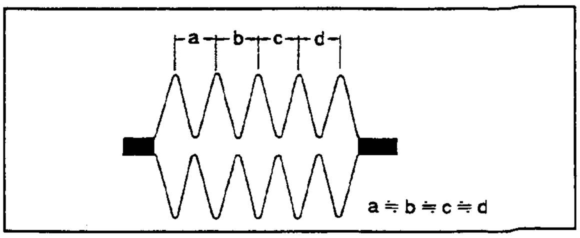


Fig. 42

4-6. CHECK AFTER ADJUSTMENT

4-6-1. TRACKING CHECK

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (Fig. 43).
2) Then, confirm that the minimum amplitude value (EMIN) is 65 % of the maximum value (EMAX) or larger (Fig. 44).
3) Confirm that no large fluctuations occur on the waveform (Fig. 45).

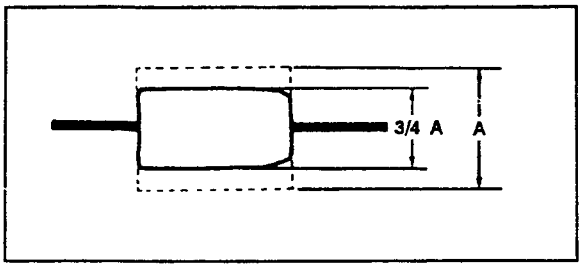


Fig. 43

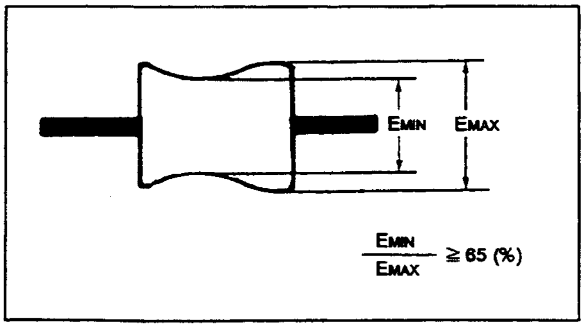

EMIN
EMAX
EMIN / EMAX ≧ 65 (%)

Fig. 44

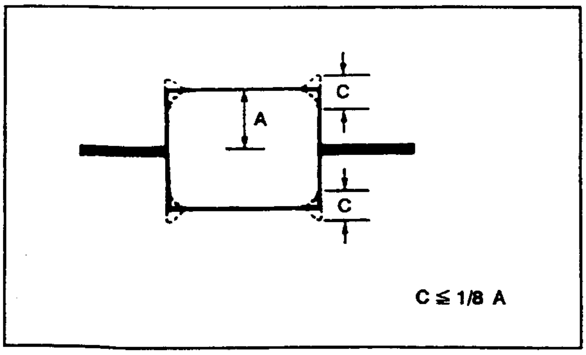


Fig. 45

4-6-2. RISING CHECK (Fig. 46)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF wave form rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds, Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

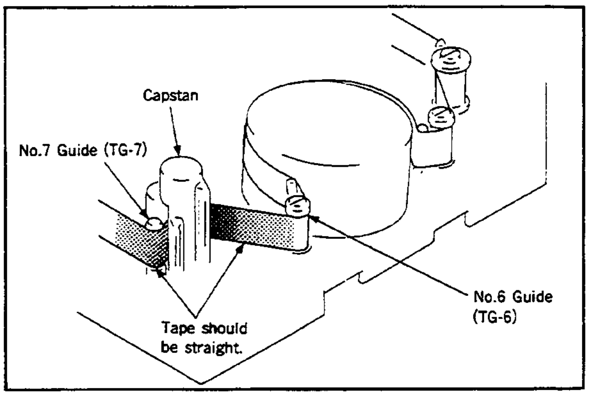

Capstan
No.7 Guide (TG-7)
No.6 Guide (TG-6)
Tape should be straight.

Fig. 46

4-6-3. TAPE PATH CHECK (Fig. 47)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3mm, at the lower flange of the No. 2 guide , the upper flange of the No.3 guide, the upper flange of the No. 6 guide and the No.7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3mm at the flange of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

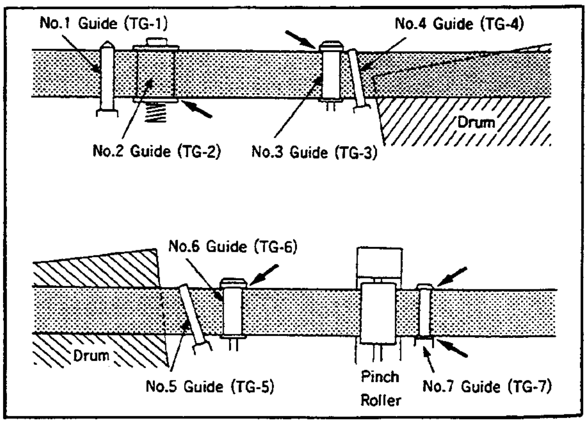

No.1 Guide (TG-1)
No.4 Guide (TG-4)
Drum
No.2 Guide (TG-2)
No.3 Guide (TG-3)
No.6 Guide (TG-6)
Drum
No.5 Guide (TG-5)
Pinch Roller
No.7 Guide (TG-7)

Fig. 47

8mm Video MECHANICAL ADJUSTMENT MANUAL IV

A MECHANISM

SUPPLIMENT-2

Video 8

<Connection of Mode Selector IV Conversion Connector>

In use of Mode selector IV conversion connector(J-6082-167-A), there are two different connecting methods depending on the model connected:

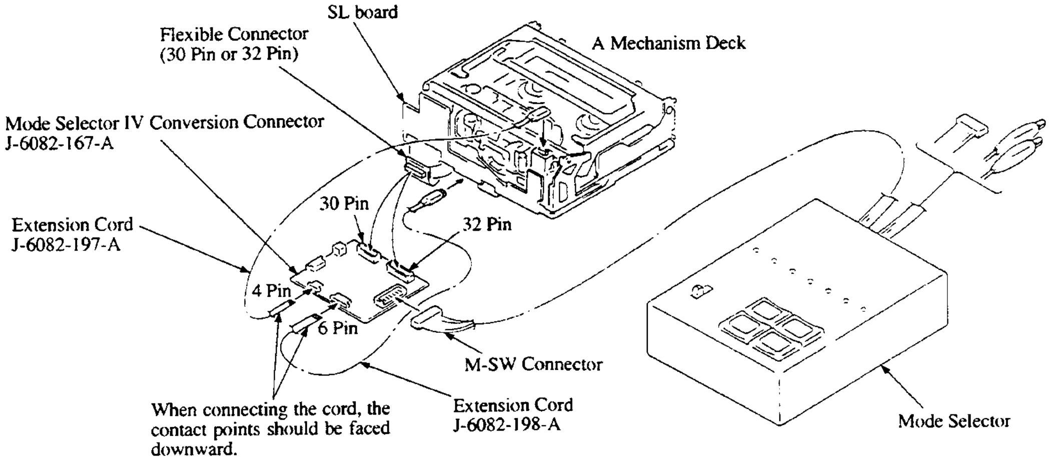
1. CCD-FX series

With the SL board mounted on mechanical deck, connect 30-pin(or 32-pin) connector to 30-pin(or 32-pin) Mode selector IV conversion connector.

(CCD-FX300 series, FX400 series. FX500 series
→ 30-pin connector (FP425 or FP600)
CCD-FX700 series → 32-pin connector (FP477))

2. Models other than above

Connect the extension cord(J-6082-197-A) to loading motor 4-pin connector and extension cord (J-6082-198-A) to mode switch 6-pin connector in mechanical deck, then connect the other end of cord to 4-pin and 6-pin connectors of Mode selector IV conversion connector respectively, as shown below.


SL board
Flexible Connector (30 Pin or 32 Pin)
A Mechanism Deck
Mode Selector IV Conversion Connector J-6082-167-A
30 Pin
Extension Cord J-6082-197-A
32 Pin
4 Pin
6 Pin
M-SW Connector
When connecting the cord, the contact points should be faced downward.
Extension Cord J-6082-198-A
Mode Selector

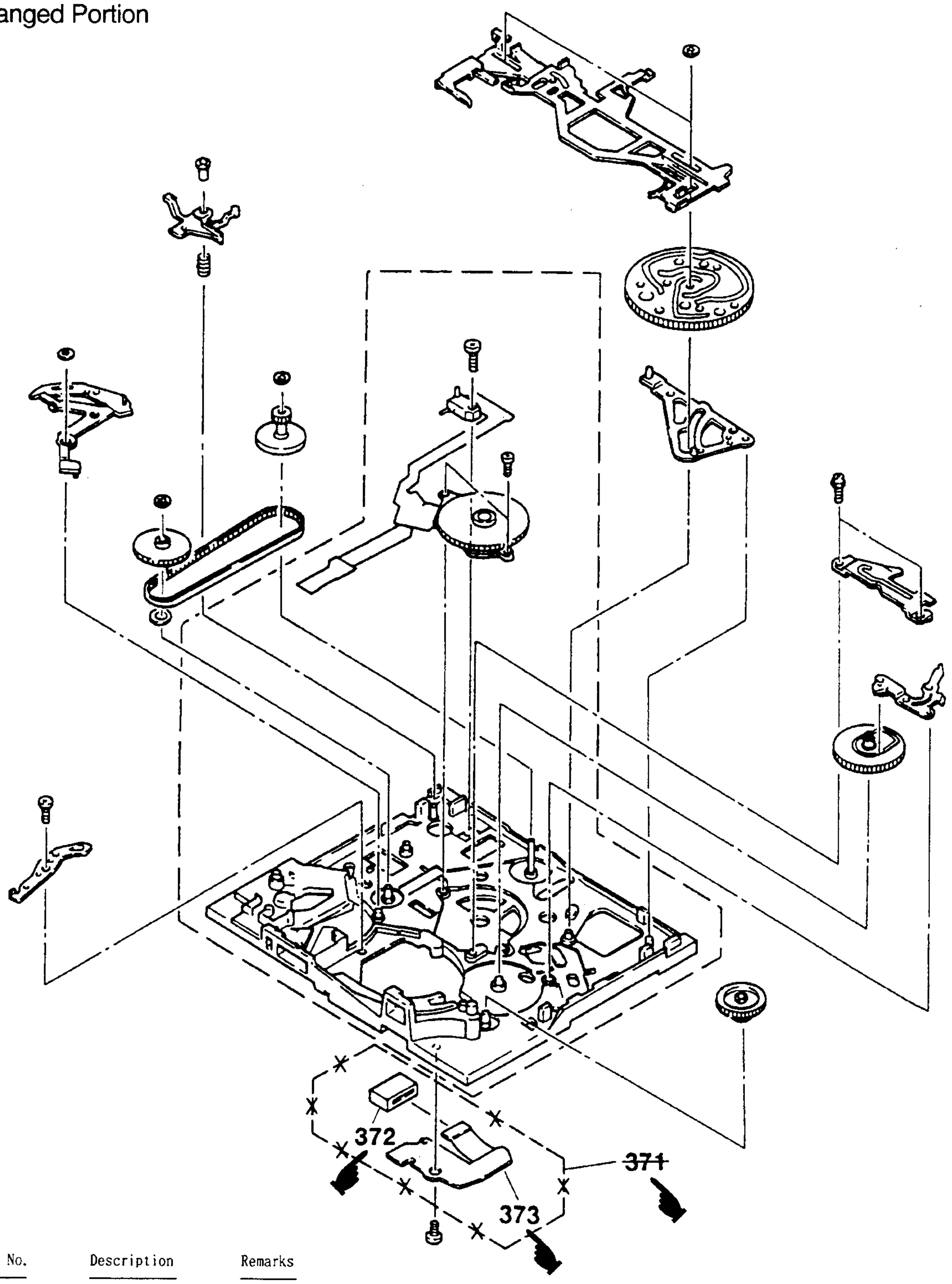
<CORRECTION>

P10. 2-4 Service jigs list

		Incorrect		Correct
J-15	FWD B.T adjusting driver	J-6082-182-A	➡	J-6082-187-A

MECHANISM CHASSIS ASSEMBLY (2)

☛ : Changed Portion



Ref.No.	Part No.	Description	Remarks
~~371~~	~~A-7040-311-A~~	~~FP-444 ASSY~~	☛
372	1-691-254-13	CONNECTOR, TRANSLATION 10P	☛
373	1-641-639-13	FP-442 FLEXIBLE BOARD	☛

English
93E18163-1
Printed in Japan

©1993.5

Published by CV Quality Engineering DIV.

Sony Corporation
Personal Video Group

9-973-199-84